THE IRON TRADE REVIEW

VOLUME XXXIV. CLEVELAND, O., SEPTEMBER 26, 1901. NUMBER 39

THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The transactions of the week indicate sustained and widespread activity in iron and steel, with advances in prices of some materials and a firmer market in the case of others. It was intimated one week ago that the steel corporation not only had taken all shipments of iron from merchant furnaces during the strike but was likely, contrary to recent expectation, to be a buyer of Bessemer and basic irons for delivery in October. Considerable purchases have been made in the past week from Valley furnaces, and it is estimated that 30,000 to 40,000 tons were taken by the leading interest, not to mention upwards of 10,000 tons of basic iron. These purchases in addition to some made by other steel companies probably bring the total of the week's transactions in steel making pig iron in the Valleys and Pittsburg to 60,000 tons. The price paid for Bessemer iron was $15.25 at Valley furnaces, about 25 cents higher than quotations made in the recent period of quietness in Bessemer iron. The maintenance of the $15.25 basis is significant of the disposition of large interests to have the present level of prices preserved; and contracts for steel and finished material of which there are not a few based on the Bessemer iron market, will probably see little fluctuation for months to come. There are evidences that consumption is keeping up to the remarkable level that earlier in the year seemed to be the culmination of the activity starting in the late summer of 1900. But there are now few if any ready to say that there are signs of recession from the pace kept up in recent months. Allowing for the appearance of extraordinary activity that has followed the ending of the steel strike, in the simultaneous efforts of many buyers to get their orders in early, there are sufficient data to warrant confidence in a strong market well into next year. Thus far only guesses have been made of the tonnage of standard section rails booked for next year. Under the lead of important lines contracting has been going on steadily, and the conditions of the mills may be inferred from the statement that in the Chicago district the rail capacity is taken up to the middle of next year. What the shortage in the corn crop may do later in reducing earnings of Western roads is purely a matter of speculation; as yet this factor has been regarded as too remote in its bearing on the iron trade for serious attention. The action of the manufacturers of steel bars and of small shapes in advancing base prices $2 a ton is an index to the condition of the mills engaged on these products. On early delivery business the new prices have been effective for some time. Since the announcement there has been liberal contracting, the Chicago district reporting 15,000 to 20,000 tons of bars sold through one company, and Central Western territory has added very materially to this total. Vessel business has brought additional plate tonnage forward in the week, and structural mills find that bridge and building operations will keep them employed without any letting up in the winter months. The position of sellers of foundry pig iron appears stronger in the past week. In New York and Pennsylvania there has been some irregularity of prices in cases where sellers have been seeking orders in new fields. This would indicate that some furnaces are not well booked ahead, but it is the rule that the foundry iron product of 1901 is substantially sold today. There has been more liberal contracting for 1902 in the past week, but sales reaching into next year are still in the minority.

PITTSBURG.

OFFICE OF *The Iron Trade Review*,
429 PARK BUILDING, Sept. 25.

Pittsburg sellers of Bessemer iron have not shared as yet in the purchases of the United States Steel Corporation. It is stated, however, that Valley furnaces have sold considerable Bessemer for October delivery, estimates of the amount ranging above 30,000 tons. While the contracts closed are reported to have been placed at $15.25 per ton at the furnace, sales of iron have been made in small lots at lower prices, and Bessemer is being offered at $15 per ton at the furnace. Considerable business has been done also in basic iron and we can report 10,000 tons placed at $14.50 at the Valley furnace.

Independent manufacturers of finished material are making inquiry for open-hearth billets for delivery during the last quarter of the year, and it is probable that a considerable tonnage will be placed before the end of the week. The market on both Bessemer and open-hearth billets is somewhat stronger than it has been for some time and any considerable buying movement will no doubt advance prices slightly. On small billets an advance of $2 a ton has been made.

Manufacturers of steel bars at a meeting held the latter part of last week decided to advance the price of steel bars from 1.40c to 1.50c. While the latter price has been ruling for some time the quotation of the bar association was 1.40c and the action taken practically leaves the market prices the same as they have been. The manufacturers at the meeting reported that a large tonnage is being carried on all their books, specifications already received insuring full operations until the first of the year.

Consumers of tin plate, sheets and tubes are not buying as heavily from jobbers for spot shipment as was the case during the last week of the strike, and whenever possible they are willing to wait for mill shipments in order to prevent paying premiums asked by the jobbers for spot delivery.

Nearly all of the tile mills of the companies of the United States Steel Corporation affected by the strike resumed operations this week. The National Steel Co., American Steel Hoop Co., and the American Sheet Steel Co. have all their mills in operation, while the National Tube Co. has only one mill off in this district. The strikers in the mills of the American Tin Plate Co., made non-union on account of the strike settlement, have not yet become reconciled to the terms of the agreement and to an extent are preventing the smooth operation of these mills by their refusal to return to work under the present terms. All of the tin house workers employed at the tin plate plants tied up on account of the strike will report for work next Monday and the delivery of tin plate will be resumed shortly thereafter.

PIG IRON.—Valley furnaces have made considerable sales of Bessemer iron to the United States Steel Corporation in the past week. While it is reported that the price paid for this iron was $15.25 at the furnace there have been offerings of iron in this city at much lower prices and a few sales reported. It is further reported that the several companies of the United

States Steel Corporation have purchased basic iron to the extent of 10,000 tons for delivery during October at $14.50 at the furnace. In basic also sales have been reported as low as $15 per ton, delivered, Pittsburg. One of the companies of the United States Steel Corporation this week contracted for 10,000 tons of forge iron for delivery during the next three months. The demand for foundry iron continues fair at $14.25, delivered, Pittsburg. Sales of the week amount to about 2,000 tons for delivery in the remainder of the year. We revise quotations as follows:

Bessemer, Valley	$15 00 to 15 25
Bessemer, Pittsburg	15 75 to 16 00
No. 1 Foundry	14 75 to 15 00
No. 2 Foundry	14 25 to 14 50
No. 3 Foundry	13 50 to 13 75
Gray Forge, Pittsburg	13 50 to 13 60
Chilled Basic, Valley	14 25 to 14 50
Chilled Basic, Pittsburgh	15 00 to 15 25

STEEL.—Independent manufacturers of sheets, tin plate and bars are now making inquiry for both Bessemer and open-hearth billets for delivery during the remainder of the year. The indications are that a considerable tonnage will be placed before the end of the week. Bessemer billets for future delivery are quoted at $23.50 to $24 per ton, while for spot shipment as high as $25 and $26 per ton is secured. Open-hearth billets for future delivery are quoted at $26 per ton, while for spot shipment $27 per ton is asked. Small sales of wire rods have been made during the week at $33.50 to $34 per ton.

FERRO-MANGANESE.—Little domestic manganese is selling at the present time. Domestic, 80 per cent is quoted at $55 per ton and foreign at $53.50 per ton.

SPELTER.—The spelter market is much firmer than it has been for some time and prices have advanced accordingly. For prime Western grades the ruling quotation is 4c to 4.03c, Pittsburg.

MUCK BAR.—The demand for muck bar continues fair. The resumption of operations at the mills of the American Steel Hoop Co. has greatly relieved the situation. We quote muck iron at $30 to $30.50 per ton.

SKELP.—The resumption of operations at the mills of the National Tube Co. has greatly relieved the scarcity of both iron and steel skelp and prices have gone somewhat lower. Iron skelp, both grooved and sheared, is held at 1.95c to 2c, while steel skelp is held at 1.87½c to 1.90c.

RAILS AND TRACK MATERIAL.—A large business in standard section rails for delivery next year has already been done on the basis of $28 per ton, and the rail manufacturers report that a considerable tonnage has been contracted for during the week. We make the following quotations: Standard sections, 50 pounds and over, in lots of 200 tons and over, $28; car lots and less than 200 tons, $30; less than car lots, $32; light rails, 8 pounds, $45; 12 pounds, $38; 16 pounds, $35; 20 pounds, $34; 25 to 40 pounds, $32. Track material: Spikes, 1.95c to 2c; track bolts, square heads, 2.40c; hexagon heads, 2.55c; fish plates, 1.50c to 1.60c.

PLATES.—The plate market continues firm and considerable new business is being placed daily. While the leading producer reports tonnage on hand for two months, some of the smaller producers are not provided for more than one month's operation. However, the market is strong, inquiries received during the past few days calling for a very large tonnage for delivery the next three or four months. We make the following quotations: Tank plate, ¼-inch thick up to 100 inches in width, 1.60c at mill, Pittsburg; flange and boiler steel, 1.70c; marine, ordinary firebox, A. M. B. A. specifications, 1.80c; still bottom steel, 1.80c; locomotive firebox, not less than 2.10c; and it ranges in price to 3c. Plates more than 100 inches wide, 5 cents extra 100 pounds. Plates 3-16 of an inch in thickness, $1 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5 cents extra a hundred pounds for less than carload lots. Terms, net cash in 30 days.

BARS.—At a meeting of the steel bar manufacturers held last week the association price on carload lots and over was advanced from 1.40c to 1.50c. Angles under 3 inches were advanced to a 1.60c base, full extras, while open-hearth angles were advanced to 1.70c. Open-hearth steel bars were advanced to 1.60c, half extras. The above prices are all on carload lots and over. For less than carload lots an advance from $1 to $2 per ton is asked. The bar situation is extremely encouraging. Nearly all the large manufacturers reported being practically filled until the first of the year, while the outlook for next spring is reported very bright. Common iron bars are quoted at 1.50c, Pittsburg, and refined iron bars 1.75c and upwards.

PIPES AND TUBES.—All but one of the idle plants of the National Tube Co. are now in operation and the daily output is nearly normal. Consumers not desiring to pay the premiums asked by the jobbers for spot shipment are urging the company to make deliveries as fast as possible on all contracts placed before and during the strike and on new business deliveries can be made within 60 days. The new business is reported enormous and the indications are that there will be an immense fall demand. Our quotations to consumers in carload lots, Pittsburg, are as follows:

MERCHANT PIPE.

	Blk. Per cent.	Galvd. Per cent.
⅛ to ⅜ and 11 to 12 inches	61	48
½ to 10 inches	68½	56

BOILER TUBES.

Steel.

	Per cent.
1 to 1¼ inches	67½
2¼ to 5 inches	65½
1¼ to 2¼ and 6 to 13 inches	60

Iron.

	Per cent.
1 to 1¼ and 2½ inches	43½
1¾ to 2¼ inches	43
2¾ to 13 inches	53

CASING.

	S. and S. Per cent.
2 to 3 inches	58
3¼ to 4 inches	63
4¼ to 12¾ inches	65

The above are carloads to consumers. Jobbers' prices are slightly lower.

SHEETS.—This week the last of the idle plants of the American Sheet Steel Co. at McKeesport, Pa., was placed in operation. With all the mills of the company operating in full, deliveries will become more satisfactory. All of the mills of the sheet combine as well as the independent sheet manufacturers are well filled up on the heavier gauges, and deliveries cannot be secured on new business in less than three months. Jobbers report that the demand for spot sheets is not nearly as great as it has been for some time and consumers are willing to wait a few weeks in order to secure deliveries from the mills rather than pay the premiums asked by the jobbing trade. Independent manufacturers continue to quote 3.35c for No. 28 gauge for delivery during October and November, while spot sheets are held at 3.60c for No. 28 and 3.50c for No. 27. The American Sheet Steel Co. makes the following quotations: On lots in 500 bundles or more of black sheets, one pass through cold rolls: Nos. 10, 11 and 12, 2.30c; Nos. 14 and 15, 2.40c; Nos. 16 and 17, 2.50c; Nos. 18, 19, 20 and 21, 2.60c; Nos. 22, 23 and 24, 2.70c; Nos. 25 and 26, 2.80c; No. 27, 2.90c; No. 28, 3c; No. 29, 3.15c; No. 30, 3.25c. On lots less than 500 bundles the American Sheet Steel Co. will not make shipments except through jobbers, and for direct shipments from mill in less than carload lots an extra charge of 10 cents per 100 pounds is made. Galvanized sheets are held at 70, 10 and 5 off in lots of 500 bundles and over, and at 70 and 10 in smaller lots. Galvanized sheets for spot shipment are held at 65 and 5 off.

STRUCTURAL MATERIAL.—Demand for structural material continues strong and none of the local mills can make deliveries on new business in less than three months. Prices remain unchanged as follows: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles, from 3 to 6 inches, 1.60c; universal mill plates, 1.60c.

WIRE AND WIRE NAILS.—All kinds of wire products continue in good demand and jobbers report that the fall trade will be the biggest in the history of the wire business. Prices remain unchanged as follows: Single carloads of wire nails to jobbers, $2.30, Pittsburg; to retailers, $2.40; plain wire, carload lots, is quoted at $2.25 to jobbers and $2.35 to retailers; painted barb wire, $2.60 in carload lots to jobbers, and $2.70 to retailers; galvanized barb wire, $2 in carload lots to jobbers, and $3 to retailers. Cut nails have been ad-

vanced to $2.05, Pittsburg, in carload lots, 2 per cent off in 10 days.

MERCHANT STEEL.—There is little change in any of the merchant lines. Shafting continues in large demand, however, at unchanged prices. We make the following quotations: Turned, cold rolled and ground shafting is quoted at 60 per cent off for car lots and 55 per cent off for less than car lots; tire steel in carload lots and over, 1.60c; less than carload lots, 1.75c to 1.80c. Toe calk is sold at 1.70c in large lots, and in small lots as high as 1.85c. Tool steel is held at 7c and upwards, according to quality.

OLD MATERIAL.—Since the strike has been declared off a better demand exists for old material of all kinds. We note the sale of 2,000 tons of steel rails at $16.25 per gross ton. Our quotations, gross tons, are as follows: Heavy melting stock, $16; low phosphorus melting stock, $16.50 to $17.50; steel rails, $16 to $16.25; busheling scrap, $13 to $14; No. 1 wrought, $16 to $17; iron rails, $18 to $19; cast borings, $7.25 to $7.50; cast scrap, $13.50 to $14.

COKE.—Owing to the operation of a large number of the H. C. Frick coke ovens in the Connellsville region only five days during the week ending Saturday, Sept. 14, the total estimated production of the region amounted to only 209,500 tons, a decrease over the output of the previous week of 14,000 tons. The shipments for the week amounted to more than 10,000 cars. Strictly Connellsville furnace coke is quoted at $1.75 to $2 per ton, while foundry is held at $2.25 to $2.40. Outside furnace coke is held at $1.40 to $1.60 and foundry at $1.90 to $2.15.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
634 MONADNOCK BLOCK, Sept. 24.

The depletion of stocks of all kinds of iron and steel products in warehouses and at mills, and the accumulation of unfilled orders on the books of all the local manufacturers and jobbers, caused by the strike, has resulted in a very firm market in this district. Finished material is very scarce, and premiums are still willingly paid by consumers in order to obtain prompt shipment. The resumption of work at the mills which have been closed during the summer, while it has produced a feeling of easiness all round, will have nd material effect on the market in this locality for some time to come, as the entire product of the mills for several weeks will be consumed in filling orders that were taken prior to the strike. As a result, prices are very firm. Bar iron and steel have been advanced $2 a ton, and there is talk of increases in other lines. The total tonnage booked during the past week has been very large, notwithstanding the depressing effect which the death and burial of the late president had on business in general. The United States Steel Corporation has taken a number of contracts for steel bars, aggregating ab ut 15,000 tons, while the sales of bar iron by the local manufacturers have also been very large. Sales of plates to shipbuilding interests of several thousand tons are reported, and the local manufacturer states that its capacity on standard rails has been sold up to the midsummer months. All the mills are behind in shipments of track supplies and light rails, and are refusing orders that call for delivery within the next three months. Pig iron is very firm, there being a scarcity for prompt shipment. The contemplated increase in the price of Southern irons has gone into effect, the price having been raised from 25 cents to 50 cents. Several thousand tons of malleable iron have been sold during the past week, and a number of large contracts for other grades, calling for delivery within the next nine months, have also been booked, aggregating an excellent tonnage. There is still a good demand for scrap, and with the approach of cold weather, the market for this material will continue to improve.

PIG IRON.—As has been contemplated for some time, the price of Southern irons was advanced last week 25 cents to 50 cents a ton. The buying of the last few days has been of large proportions, a number of 1,000-ton contracts and larger, calling for delivery extending up to next July, having been closed. There is a good demand for malleable iron, and several thousand tons have been sold by one commission house, while the sales of other grades have been of almost equal proportions. Though the number of inquiries and the tonnage represented therein increase daily car load orders still predominate. It is very difficult to secure prompt shipment of iron, most of the furnaces being well stocked with orders, and what few extra carloads are squeezed in are sold almost before they leave the furnace. We quote prices as follows:

Lake Sup Charcoal	$17 50 to $18 00	Southern Coke No. 4	$14 15 to $14 65
Local Coke Fdy. No. 1	15 50 to 16 00	Southern No. 1 Soft	15 65 to 16 00
Local Coke Fdy. No. 2	15 00 to 15 50	Southern No. 2 Soft	15 15 to 15 65
Local Coke Fdy. No. 3	14 50 to 15 00	Southern Silveries	15 45 to 15 50
Local Scotch Fdy. No. 1	15 50 to 16 00	Jackson Co. Silveries	17 00 to 17 50
Local Scotch Fdy No. 2	15 00 to 15 50	Ohio Strong Softeners	16 50 to 17 00
Local Scotch Fdy No. 3	14 50 to 15 00	Alabama Car Wheel	21 00 to 22 00
Southern Coke No. 1	14 90 to 15 65	Malleable Bessemer	16 00 to 17 10
Southern Coke No. 2	14 40 to 14 15	Coke Bessemer	17 50 to 18 50
Southern Coke No. 3	11 40 to 14 15		

BARS.—Since our last report the price of steel bars has been advanced $2 per ton. Some very large contracts have been closed during the past week for both iron and steel, the United States Steel Corporation alone having booked orders for steel bars aggregating 15,000 tons. Little material can be had from mills in this district for prompt shipment, all the independent concerns having sold their capacity during the period of the strike for at least two months ahead. The entrance of the National Rolling Mill Co. of Hartford City, Ind., into the local field, will relieve the situation some, though it will be several months before conditions will again become normal. We quote steel bars for immediate shipment, 1.75c to 1.80c, Chicago, and iron, 1.70c, Chicago. Out of store, steel and iron, 2c; on contracts for large lots and extended deliveries, steel, 1.65c; iron, 1.60c.

SHEETS.—The shortage in this material still continues, practically all the business being done through jobbers. It will be some months before the mills can again enter this market, owing to the large number of unfilled orders that were booked prior to the strike. Prices are irregular, according to the size of order and stock in jobbers' warehouses. We quote as follows, No. 27 black, 4.10c to 4.25c; and galvanized, 60 per cent and 5 per cent from store.

STRUCTURAL STEEL.—There is no change from the situation reported last week. An enormous amount of building is being done in this city and contiguous territory, and a steady stream of orders of the smaller kind continues to come in. Owing to the fact that most of the mills are considerably behind in deliveries, there is a heavy demand from jobbers' stock, for which premiums are willingly paid. It is reported that officials of the Lake Shore and Rock Island railroads will hold a meeting this week to discuss the letting of contracts for the new depot which these roads will build in this city, the architects' plans being finished. We quote mill shipments, carload lots, as follows: Beams, 15 inches and under, 1.75c; 18 inches and over, 1.85c; angles, 1.75c to 1.80c; plates, 1.75c, base; tees, 1.80c; zees, 1.75c; small lots from store, ¼c higher; beams and channels from store, ½c to ¾c per pound higher.

RAILS AND TRACK SUPPLIES.—The local interest reports that it has booked orders for standard rails at $28 per ton, that will tax its entire capacity up to next July. Specifications continue to be received from railroads, which show that much new track is being laid or is planned. A large tonnage has also been booked in track supplies and light rails, though both the local manufacturers are considerably behind in shipments of the former material, and are accepting no new business that calls for delivery within that period. Our quotations follow: Standard rails, $28; light sections, $33 to $35, according to size; out of store, $40 to $44 splice bars, 1.60c to 1.70c; spikes, 1.90c to 2c; out of store, 2c; track bolts, hexagon nuts, 2.80c to 2.90c; out of store, 2.90c to 3c; square nuts, 2.65c to 2.75c; out of store, 2.75c to 2.85c.

MERCHANT STEEL.—Mills are still crowded with orders, consisting of contracts already taken and for such new business as they can accept. No large orders are being taken in this market without first being submitted to the home office. Prices are very firm. Our quotations for mill shipments, Chicago delivery, follow: Smooth finished tire steel, 1.90c to 2c; open-hearth spring steel, 2.50c to 2.75c; toe calk, 2.40c to 2.60c; sleigh shoe, 1.85c to 1.90c; cutter shoe, 2.40c to 2.60c; ordinary tool steel, 6c to 7c; specials, 13c and upwards. Cold rolled shafting, carload lots, 55 per cent and upwards.

PLATES.—A good business has been booked in boiler plates, and orders aggregating several thousand tons have been re-

ceived from shipbuilding interests. Mills report they are still behind in deliveries of material. Our quotations follow: Tank steel, base, ¼-inch, 1.75c; flange steel, 1.90c to 2c; marine steel, 1.95c; firebox steel, ordinary, 2c to 2.10c; special, 2.25c and upwards. Tank steel from store, 2c to 2.20c; flange steel from store, 2.25c.

MERCHANT PIPE AND BOILER TUBES.—Practically all the business in this district is being done through jobbers, the National Tube Co. not yet having entered the market. Jobbers' stocks are low, some sizes being exhausted entirely, and prices therefore vary according to the size of order and stock in hand. We quote as follows:

MERCHANT PIPE, RANDOM LENGTHS.

	Black Per cent.	Galv. Per cent.
⅛ to ⅜ and 11 to 12 in	52	37
⅛ to 10 inches	60	46

BOILER TUBES.

	Steel Per cent.	Iron Per Cent.
1 to 1½ in	35	30
1½ to 2½ in	40	35
2¾ to 5 in	50	45
6 in. and larger	40	35

WIRE AND WIRE NAILS.—A good business has been done in barb and wire fencing and in wire nails. Reports from jobbers and retail dealers indicate that stocks all over the country are very low, and that the demand for material was never better. Our quotations follow: Carloads of wire nails to jobbers, $2.40, Chicago; to retailers, $2.50; plain wire, carload lots to jobbers, $2.35; to retailers, $2.45; painted barb wire to jobbers, carloads, $2.70; to retailers, $2.80; galvanized barb wire, carloads to jobbers, $3; to retailers, $3.10.

OLD MATERIAL.—With the approach of cold weather comes a scarcity of material and an improved tone to the market. Nearly all kinds of scrap iron find a ready sale, the demand being large. Prices are firm, with the prospect that there will be an early advance in some lines. Our quotations follow:

Old iron rails	$20 00 to $21 00	Old Wheels	$16 00 to $16 50
Old steel rails, long	16 00 to 17 00	Heavy melting steel	13 00 to 14 00
Old steel rails, mixed	13 50 to 14 50	Mixed country steel	10 00 to 10 50
Relaying rails	24 00 to 25 00		

The following are selling prices per net ton:

No. 1 R. R. wrought	$16 00 to $16 50	Iron axles	$20 50 to $21 00
No. 2 R. R. wrought	13 00 to 13 50	Cast borings	4 00 to 4 50
Dealers' forge	12 50 to 13 00	Wrought turnings	10 00 to 10 50
No. 1 busheling	10 50 to 11 00	Iron axle turnings	11 00 to 11 50
Heavy cast	11 00 to 11 50	Steel axle turnings	9 50 to 10 00
Railway malleable	12 00 to 12 50	Stove plates	7 50 to 8 00
Country malleable	10 50 to 11 00	Old iron splice bars	16 00 to 16 50

CLEVELAND

OFFICE OF *The Iron Trade Review*, 1064 ROSE BUILDING, Sept. 25.

The ending of the steel strike has brought heavier calls for ore shipments to furnaces recently out of blast and the railroads are unable to get ore to the furnaces fast enough to suit consumers. The slight reduction made in the shipping program of the United States Steel Corporation a few weeks ago may yet be made up in part, though it was not of any great moment in the first instance. It is understood that Zanesville furnace of the National Steel Co., which it was intended to blow out when the ores on hand were used up, will now be kept in blast indefinitely. Shipments of ore from all parts continue heavy and it is entirely likely that a new record in the vicinity of the 20,000,000-ton mark will be made this year. Purchases of ore in a small way have continued through the month, but the call has been greater for non-Bessemer than for Bessemer grades. The merchant furnacemen running on Bessemer have no assurance of a purchaser for their iron beyond November 1 and naturally are still very conservative in their ore buying.

PIG IRON.—The United States Steel Corporation by its purchases of the past week is believed to have taken up practically all the iron offered by the Bessemer association furnaces for October. Some scattering sales had previously been made for October by these furnaces, and about 30,000 tons was still available when the steel corporation entered the market. The price on this iron was $15.25, which in view of the slight weakening in Bessemer recently indicates a disposition on the part of the United States Steel Corporation to hold the present level, many of its contracts with consumers of steel and finished material being based on the price of Bessemer iron. The transactions of the week taken in connection with other developments of the past few months point to the strong sustaining force that is under the market and that will guarantee its stability for a long time to come. Some purchases of basic iron have also been made in the week and it is evident that all of this iron that can be made this year will be called for by the basic open-hearth steel interests. Foundry iron, while it has not generally advanced in price, is stronger to the extent that the weaker sellers of recent months are now up to the prevailing level. Cleveland deliveries are on the basis of $14 to $14.25 for No. 2, the local price being somewhat less than the Valley price plus the freight. Valley furnaces quote $13.50 to $13.75 for No. 2 and on early deliveries some sellers ask $14 at furnace. Cleveland and nearby foundries are extremely busy. Some inquiries for iron for delivery running into next year have been made, but 100-ton lots are still the usual limit. We quote the Cleveland market as follows:

Bessemer	$16 00	Valley Scotch No. 1	$14 50 to $14 75
No. 1 Strong F'dry	14 50 to 14 75	Valley Scotch No. 2	14 00 to 14 25
No. 2 Strong F'dry	14 00 to 14 25	Gray forge, Valley	13 00
No. 3 Foundry	13 75 to 14 00	LakeSuperior charc'l	17 00 to 17 50

FINISHED MATERIAL.—The activity in every line of finished iron and steel continues and in the past week has led to some advances. The manufacturers of steel bars have advanced their price $2 a ton, making the minimum 1.50c, Pittsburg, for Bessemer and 1.60c, Pittsburg, for open-hearth bars. Small shapes are also advanced, 1.60c, Pittsburg, being now the base on Bessemer channels, angles, zees and tees smaller than 3 inches, and 1.70c, Pittsburg, base for open-hearth. Tire steel has advanced to 1.70c, Pittsburg, and hoops are up $1 a ton, or to 1.90c, Pittsburg, as minimum. Bar iron at Valley mill is now on a parity with steel bars at Pittsburg, 1.50c being the new mill price on contract lots. Demand for bars has been of good proportions, a feature of the week's business being the good tonnages placed with mills by jobbers to replenish stocks. In all the products of the American Steel Hoop Co. there has been a heavy demand since the full resumption at the mills. The sheet situation is still mixed as to prices. The American Sheet Steel Co. is quoting for delivery in the next two months on the basis of the $5 per ton reduction which it announced early in July, making No. 28 3.10c at Pittsburg. Jobbers at the same time are getting 3.95c for No. 28 out of stock. The consumption is very heavy and it will be many weeks before the mills can slacken up from the present rapid pace of production. The plate situation continues strong. More business from lake shipyards is being placed and the mills are as far behind in deliveries as at any time in months. Structural material is going steadily on to the books of the mills, most difficulty being found in getting deliveries on small shapes.

OLD MATERIAL.—The market is fairly active with prices quite well sustained, and in steel melting stock an advance over recent quotations. Local dealers make the following quotations all for gross tons: Old iron rails, $21 to $21.50; old steel rails, $16 to $17; short lengths, $15.50 to $16; old car wheels, $15.50; No. 1 railroad wrought, $16 to $16.50; mill scrap, $14.50 to $15; No. 1 machine cast scrap, $14; iron axles, $22 to $23; wrought turnings, $12 to $12.50; cast borings, $7 to $7.50; uncut wrought iron boilers, $6.50 to $7; steel boiler plates, $13; grate bars, $9; sheet iron, $9.50; stove plate, $10.

CINCINNATI.

Sept. 23

Business was entirely suspended on the day of the funeral of the dead executive, and that day was more quiet and more business houses were closed up than on an average Sunday.

Business has also been largely affected locally by the second Cincinnati Fall Festival that has taken time and attention away from manufacturing and jobbing. In spite of interruptions the trade as a whole has been good. Everything has firmed up, and in some cases prices have advanced. The demand for pig iron has been good and well distributed, and the demand for finished material has also been quite active. One of two Southern furnaces have advanced their prices on foundry grades, and pig iron prices as to the minimum may all be quoted up some. The settlement of the strike among the employes of the United States Steel Corporation has not had the effect of easing up the market at all, though deliveries are now being promised in shorter time.

PIG IRON.—A representative of one of the large Cincinnati

pig iron concerns who has just made an extended trip through the South reports that there is a shortage of the stocks in furnace yards compared with what is generally carried, and this is more especially true of the foundry grades. Stocks are also low with the foundries, which is natural in view of the fact that they have been buying just what they needed almost the entire season. The foundrymen have been expecting a decline, but it now looks as though they might first see an advance. Orders are well distributed among the various grades and all lines of consumers have been buying, both manufacturers that use all the castings they make in their own foundries and foundries that cast for the trade. There have been no very large orders booked during the week, most of the business being for 100 to 500 ton lots, the aggregate of which is a good round tonnage. Iron men claim that while the stocks in the country have been slowly and steadily decreasing since May they are likely to decrease more rapidly than ever, in view of the fact that production may drop off somewhat with the approach of the cold weather and increased trouble in getting ore and fuel in the South. But as yet the market has not shown much of an advance, and prices f. o. b. Cincinnati are quoted as follows:

Southern Fdy. No. 1	$13 75 to $14 00	Northern Fdy. No. 1	$15 10 to $15 35
" " 2	13 25 to 13 50	" " 2	14 60 to 14 75
" " 3	12 75 to 13 00	Charcoal C. W. iron	17 50 to 18 50
" " 4	12 25 to 12 50	Malleable coke iron	15 00 to 15 50
So. Fdy No 1 soft	13 75 to 14 00	Gray Forge mottled	12 00 to 12 25
So Fdy No. 2 soft	13 25 to 13 50	Jackson Co. Sil'y No. 1	15 60 to 15 85

FINISHED MATERIAL.—The immediate effect of the settlement of the steel strike has been to make mill deliveries somewhat easier. The demand for material has been good through all the trouble with the employes of the United States Steel Corporation, and there has been much complaint about slow deliveries. Some consumers still say that they do not notice much improvement and that it is hard to get material. There has been something of an advance, steel bars going up $2 a ton by concerted action of makers. The following prices are for Cincinnati in car load lots: Iron bars, 1.65c base; steel bars, 1.65c to 1.75c base; angles, 1.90c to 2c base; plates, 1.85c to 1.90c base; sheets, No. 28, 3.35c to 3.40c, and 3.95c to 4c out of store; sheets, No. 12 blue annealed, 2.35c and 2.70c out of store.

OLD MATERIAL.—Some firms report an improvement in the scrap market with a better demand for old rails and old iron car wheels. Steel melting scrap is firmer, but in general there is no advance in prices over previous quotations. The following are given as representing the market:

No 1 Wrough R. R., net tons	$14 00 to 14 50
Cast Machine and Foundry	12 50 to 12 50
Old Iron Rails	17 50 to 18 00
Old Steel Rails	14 75 to 15 00
Steel Rails, Short Lengths	13 50 to 13 75
Iron Axles	18 50 to 19 00
Car Wheels	16 75 to 17 00
Stove Plates	9 75 to 10 00
Wrought Turnings, net tons	10 00 to 10 25
Cast Borings, net tons	6 75 to 7 05

PHILADELPHIA.

Sept. 24.

To what extent the settlement of the steel strike will influence the price of raw as well as finished material remains to be seen. According to the generally accepted theory we should witness at least a slight advance in the former, if any increase in demand is felt, while in the latter lower quotations should govern as soon as stocks are replenished.

PIG IRON.—Quietness has characterized the market during the week, without resulting in any material change of prices. While buying has not been anything out of the ordinary, stocks on hand are light, which brightens the outlook, and it is generally conceded that for the balance of this year at least a variation of 50 cents per ton either way would be an extreme limit. Buyers do not show any disposition to accept advances, and on the other hand sellers seem to be more unanimous in opposing all attempts to shade current quotations. Prices remain in about the same position as they have for a few weeks past and the market for Philadelphia and immediate vicinity ranges about as follows: No. 1 X foundry, $15.50 to $16; No. 2 X foundry, $14.85 to $15.25; No. 2 plain, $14.25 to $14.75; standard gray forge, $13.75 to $14; ordinary gray forge, $13.25 to 13.50; basic (chilled), $14 to $14.25.

FINISHED MATERIAL.—The settlement of labor difficulties in the steel trade has allayed the fears of greater scarcity, although order books are as crowded as they have been at any time. The most encouraging feature is that demand is not confined to any one line, but applies to all forms of finished material. Under present conditions but little if any change in values can be expected for a considerable period. For city and near-by deliveries quotations are about as follows: Plates, ¼-inch and thicker, 1.75c to 1.80c; bars, iron, 1.60c to 1.65c; bars, steel, 1.62½c to 1.70c; angles, 1.75c to 1.85c; beams and channels, 1.75c to 1.85c.

OLD MATERIAL.—A fair demand continues, with prices slightly firmer. Bids and offers range about as follows for deliveries in buyer's yard: Choice railroad scrap, $17.75 to $18.50; No. 1 yard scrap, $13.75 to $14.25; No. 2 light scrap, $12 to $12.50; machinery cast, $13.75 to $14.25; heavy steel scrap, $16.50 to $17; old iron rails, $19 to 20; old steel rails, $16.75 to $17; wrought turnings, $11.50 to $12; cast borings, $7.25 to $7.75; old car wheels, $16.50 to $17; old iron axles, $22 to $23.

Material for the Cupola Bottom.

Some folks use the gangway sand for the cupola bottom, and others use a mixture of this, with molding sand. Others use exclusively the fine cinder, riddled from the cupola dump, with what sand may be naturally mixed with it. This fine cinder is very much coarser than any sand; and it is probably the best of all material for the purpose. Its coarseness permits the moisture and gases to pass from it freely, without danger of "scabbing," which latter is almost sure to cause a run-out. Besides, this material may be rammed pretty hard without probability of getting it so compact as to prevent free vent. Also, a little too much water in this material is not nearly so serious a matter as it would be in case of a finer substance.

While the man who makes up the sand bottom of the cupola ought always to take great pains to get the temper just right, and to ram it just hard enough, and not too hard, with this coarse material the danger from unskilled manipulation is greatly minimized. All joints should be filled with stiff clay before the sand is put in.

Of course, the iron does not run out at the bottom very often. In some foundries, this seldom happens, while in others it is of frequent occurrence. But, frequent or otherwise, the question is, what is to be done when it occurs.

Tap out and draw off all the melted iron. Stop the blast at once. Do not try to stop the leak till the flow of iron has been considerably reduced. Of course, you have plenty of good stiff mud all ready for an emergency of this kind. Now, the leak will be at the juncture of the drop doors with the ring bottom, or with each other (in case of double doors) at the lap.

Fill the crevice thoroughly for a good long distance each way from the leak. Place a mass of mud over the place where the leak started, place a small core-plate under it and hold in place by means of an upright prop. Do not stop applying the mud till the iron ceases to run. If the iron bottom, or the door has been heated to redness at any point, wait till it cools off a little before putting on the blast again. Do not under any circumstances put on the blast till after the leak is entirely stopped. Then, wait a little while, having kept the cupola thoroughly drained of the melted iron throughout the whole operation. Now, put on the blast; and the chances are that you will get through with the remainder of the blast without any further trouble. Do not be afraid for the consequences of taking plenty of time for this job. The coke burns but very slowly while the blast is off. If your cupola is properly charged, a shut-down of 15 or 20 minutes' duration will do no harm.—[E. H. Putnam in Tradesman.

White Metal Mixtures.

A brass founder asks us for a good mixture for white metal and we herewith publish some formulæ which an authority says are practical. For a hard, white metal the proportions are: Sheet brass, 1 lb.; zinc, 2 oz.; tin, 1 oz. Another formula is: Sheet brass, 2 lbs.; lead, 2 oz.; tin, 2 oz.; zinc, 1 oz. When not wanted so hard there is this mixture: Copper, 1 lb.; zinc, 1 lb.; tin, 3 lbs.; antimony, 7 lbs.

Any of these mixtures can be changed to suit the class of castings. What one man will use another man will say is too hard or too soft, and by trying the various mixtures given the brass founder can determine upon a metal that suits him.—[Aluminum World.

THE IRON TRADE REVIEW

Devoted to the Machinery, Metal-Working and Foundry Trades, and Iron and Steel Manufacture.

PUBLISHED EVERY THURSDAY BY

THE IRON & STEEL PRESS CO.,

ROSE BUILDING, CLEVELAND, OHIO.

G. H. GARDNER, President and Treasurer.
JOHN A. PENTON, Vice-President.
A. I. FINDLEY, Secretary.

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CHICAGO : 934 Monadnock Block, GEO. H. GRIFFITHS, Manager.
PITTSBURG : 429 Park Building, A. O. BACKERT, Manager.
NEW YORK : 150 Nassau St., D. C. WARREN, Manager.

Subscription, $3.00 per annum. To Foreign Countries, $4.00.
Advertising Rates Furnished on Application.

The Cleveland News Co. will supply the trade with THE IRON TRADE REVIEW through the regular channels of the American News Co.

ENTERED AT THE POST OFFICE AT CLEVELAND, O., AS SECOND CLASS MATTER

SEPTEMBER 26, 1901.

WILL UNIONISM HEED THE LESSON?

The suit of the Taff Vale Railway against the Amalgamated Society of Railway Servants may mark a turning point in labor unionism in Great Britain. The railay sued the union because one of the latter's officers induced men to break their contracts by picketing the Great Western station at Cardiff, Wales. The decision of the House of Lords, which we have already referred to, is that the union is responsible for damage resulting from such act of one of its officers and that the funds of the union may be attached if the railway company proves its case. It is stated that in the damage suit which is soon to be tried $100,000 damages will be asked. The recent Trades Union Congress at Swansea, whose action is reported elsewhere in this issue, very properly looks with apprehension on the prospect of the practical enforcement of the Law Lords' decision. The counsel of the parliamentary committee of the congress advised it that it would be exceedingly difficult for any labor organization to conduct a strike without rendering itself financially liable to employers for the damage caused by picketing and other illegal acts. This advice of union lawyers and the action taken by the congress for bringing an early issue before the House of Lords for a definite decision concerning the legality of picketing, indicate how essential to strikes the weapon of picketing is considered. It is a confession of what we have insisted upon constantly, that intimidation is the essence of picketing. If the non-union men who attempt to take the place of union strikers have never yielded to the persuasions employed to get them into the union, what reason is there to expect that they would give up paying jobs under the mere persuasion of strikers? And when barricades are erected and the aid of armed police invoked, the men upon whom "persuasion" is to be worked consenting to be imprisoned in shop grounds for weeks for the opportunity to work free from the "persuasion" of the pickets, the claim generally made in court hearings of strike cases, that the purpose of the picket is simply to talk to the non-union worker becomes simply ridiculous.

We agree with a writer who says in comment on the recent decision of the Lords, that "it would be a sorry day for industrial England if the employers and rich corporations, with the help of the courts, were to have the trades unions utterly at their mercy and incapable of making a stand for their rights and their grievances." But it would also be a sorry day if non-union workmen should be denied the right to sell their labor and to be free from the interference of union strikers; a sorry day, too, if irresponsible leaders should be allowed to destroy or cripple the business of an employer with whom they were in conflict.

If power to inflict harm lawlessly upon non-compliant employers and non-affiliating workmen is indispensable to the perpetuity of unionism then assuredly there is need of a new foundation. If we mistake not, the year 1901 will be remembered as the year of high water mark in unionism founded on strikes, boycotts, contract-breaking, picketing and the denial of the rights of non-union labor. The decision of the British House of Lords, and the developments in the strikes of the machinists, the steel workers and the Chicago molders, on this side, would seem to point to a decline of unionism of the old stamp, using the old methods. Stricter insistence on the amenability of unionism to law will mark the future. This will not hurt legitimate unionism. We can name several conservative organizations in the United States which will not be hurt by such a course. But the repudiation of the New York agreement by the International Association of Machinists, contract breaking by the Amalgamated Association, and the refusal of Chicago molders to abide by the decision of their own officers, are plain evidences of tendencies. These must be combated if unionism in this country is to be saved from becoming an instrument of vindictive warfare rather than a conserving force commanding respect and giving due respect in turn to laws and contracts.

Any retrospect like that taken in the pamphlet recently prepared by General Manager Swank on "Iron and Steel at the Close of the 19th Century" gives great significance to statements such as the Pressed Steel Car Co. has made recently, as to the tonnage of steel entering into its cars month by month. It can scarcely be realized that this industry whose beginnings go back only four years, is now requiring in the shops of the single company named over 1,600 tons of plate and shapes a day, or fully 500,000 tons a year. Here is a new outlet for the product of our steel mills that requires a tonnage almost equal to the entire make of our open-hearth steel plants ten years ago. Such facts tell the story of the advance of our iron and steel industry, which in very truth has been in recent years by leaps and bounds.

The widening field of steel castings is a subject of constant comment. A most interesting contribution to this literature is made by the *Railroad Gazette* which has discussed recently the advantages of cast steel locomotive frames. In the last few months steel has entered into locomotive frame making to an unusual extent. Our contemporary finds that "when heavy frames are to be made, involving greater difficulties of

design and considerable areas in cross section, cast steel offers relief from some of the most difficult and expensive operations. The heavier frames can be made not only better but cheaper in cast steel; how much cheaper, pound for pound, cannot be stated in a way to cover individual designs because each design has its own difficulties. It may be said, however, that on the heavy locomotives now comonly used, the reduction in cost is well worth securing, in addition to the assurance that the frames will have no heavy welds with the possibilities of hidden flaws which every blacksmith dreads." While frames of the lighter classes are still forged in the hammer shop and large forge shops can make the frames of simple design more cheaply in wrought iron than in steel, the *Railroad Gazette* points out that the Baldwin Locomotive Works have fixed the line at which cast steel can come in economically at locomotives having cylinders 20 inches in diameter or larger. Of 550 locomotives of these larger sized cylinders built at the Baldwin works in the first eight months of the year, 336 had cast steel frames. The loss from defective steel castings in making these frames is put at a small fraction of 1 per cent. "The general feeling now seems to be," it is stated, "that cast steel fit for this work can be had in this country reasonably straight from the molds, reasonably close to the finished dimensions, and reasonably free from shrinkage strains, honeycomb and imbedded dross. There remain then only the questions of expediency and of cost in making frames from designs more or less complex and requiring greater or less cross sectional area and weight. Not the least of the value of cast steel lies perhaps in the readiness with which it may be adapted to variations of design."

National Hardware Association's Convention.

The National Hardware Association, composed of hardware jobbers, which met in Richmond, Va., last year, and in Pittsburg 1899, holds its annual convention in Cleveland Oct. 9, 10 and 11. After remarks by the president, Richard W. Shapleigh, addresses will be made at Wednesday morning's session by Hon. Tom L. Johnson, mayor of Cleveland, tendering the freedom of the city; by Chas. W. Pack, president of the Cleveland Chamber of Commerce, and by S. D. Latty on behalf of the manufacturers of Cleveland. The president's annual address and the secretary-treasurer's report will also be presented at this session. The association will hold an executive session Wednesday afternoon to hear reports of committees. Topics discussed on the first day are "The True Method of Computing Cost" and "How Can Manufacturers of Hardware and Kindred Lines Most Economically Distribute Their Product?" Other questions to be discussed by the convention are: "Outlook for the Approaching Year—Will Present Range of Prices Probably Prevail?" and "Trade Papers—Their Relation to Jobbing Interests." The paper on the former will be presented by J. C. Brainard of the Johnston & Jennings Co., Cleveland. There will be a smoker on Wednesday night, a drive about the city on Thursday and a banquet at the Chamber of Commerce, tendered by Cleveland manufacturers, on Friday evening.

A circular has gone out among the hardware manufacturers of the country, calling a meeting in Cleveland on the dates of the National Hardware Association as noted above, for the purpose of organizing an American Hardware Manufacturers' Association. The plan of the promoters is to hold annual sessions at the same time and place as the jobbers' association.

The offer recently made by Frank H. Buhl to the city of Sharon, Pa., to erect a public building at a cost of $200,000 has been accepted. The cost of maintaining the building will be about $6,000 a year and this will be raised by subscription.

ADVANCE IN STEEL BARS AND SMALL SHAPES.

The manufacturers of steel bars, small shapes and small billets have adopted a new list of base prices, effective Thursday, Sept. 19, which represents an advance of $2 a ton over the previous prices. The new schedule of base prices and extras is as follows:

Bessemer bars, .20 carbon or less, 1.50c base. Half extras, standard steel card.

Open-hearth, .20 carbon or less, 1.60c base. Half extras, standard steel card.

Carbon .21 to .50, .05c extra.

Carbon over .50, .15c extra.

Lengths of 5 feet and over, no charge for cutting. Lengths under 5 feet, one-half extras, as per steel card.

Plow beams and cultivator beams, 1.50c net.

Machine straightened and planished soft steel tire, ¾x3-16 and larger, 1.70c net.

U bars, Bessemer, 1.60c net.

U bars, open-hearth, 1.70c net.

Iron-finish steel tire, ¾x3-16 and larger, 1.65c net.

Channels, angles, zees and tees smaller than 3-inch, Bessemer, 1.60c base.

Channels, angles, zees and tees smaller than 3-inch open-hearth, 1.70c base.

Hexagons, 1.75c base. Full extras as per shape card.

Angles 3 inches and larger, less than ¼ inch thick, 1.85c net.

Square corner axle billets, 1 3-16 inch and larger, $30 per gross ton. Under 1 3-16 inch, $31 per gross ton.

Cutting to lengths under 5 feet, $1 per ton extra.

Round corner axle billets about 30 feet long, $1 per ton less than the price for corresponding size of square corner billets.

Mammoth Plant for American Bridge Co.

(Special Telegram.)

PITTSBURG, Sept. 25.—It is reliably reported that the American Bridge Co. has secured an option on 40 acres of land at West Homestead, as a site for the erection of the largest structural and bridge plant in the world. The land fronts on the Monongahela River and has excellent railroad facilities. The Pennsylvania, Pittsburg & Lake Erie and the Baltimore & Ohio railroads pass through the property. If this site is not purchased it is probable that the plant will be erected at Duquesne, where the new merchant mills of the Carnegie Steel Co. are under erection. Plans for the plant have already been prepared, but are not yet in such shape that they can be given out. With an immense bridge plant at either West Homestead or Duquesne, structural material from the Homestead Steel Works would have to be carried but a small distance. At present the nearest plant to the Homestead Steel Works is the Walker plant at West Homestead. It is a comparatively small plant and will probably be left standing if the new works are erected at West Homestead. If the large plant is to be erected at Duquesne there is a possibility of the Walker works being dismantled.

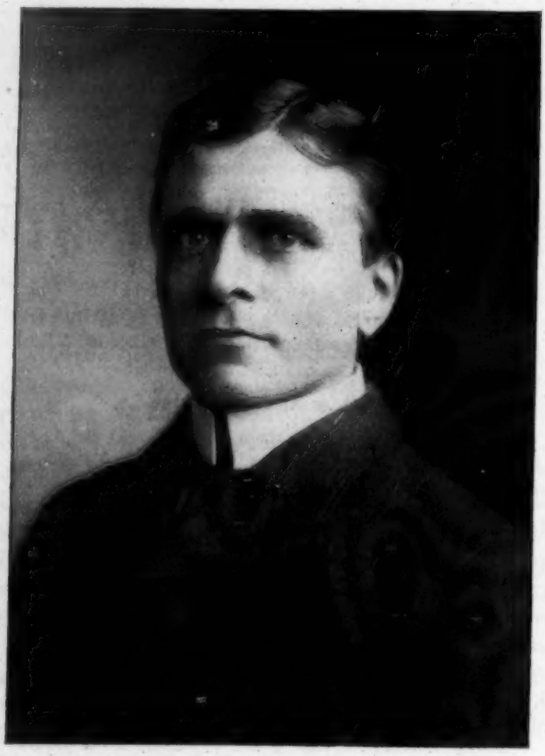
A recent commercial report to the British foreign office notes that the only important steel works in China—the Hangyang Steel Works, near Hankow—has a plant comprising a blast furnace equipment, puddling furnaces, and rolling mills, two Bessemer steel converters, an open-hearth plant, rail mills, machine shops, foundry, etc., fairly complete and modern in most respects at the time of installation. The two blast furnace stacks are 64 feet high. With good coke these furnaces will, it is claimed, produce from 75 to 80 tons each day; but as the coke ordinarily used is poor, the average production is not over 60 tons. There are 20 single puddling furnaces of the usual size, and built in groups of four, the waste gases being used to heat a vertical boiler. Five-hundredweight charges are treated in each, and the blooms are worked under three-ton steam hammers, and passed through a 20-inch train of roughing rolls. Sheet mills are supposed to be included in the plant, but do not appear to be in operation. The two Bessemer converters are 5 tons each and there is a 12-ton open-hearth furnace of ordinary construction, supplied by four Wilson gas producers. The foundry has a 20-ton traveling crane and three cupolas. The enterprise was initiated about six years ago, under the auspices of the Chinese government, but only very indifferent results have been achieved.

YSBRAND B. HAAGSMA.

Newly Elected Secretary of the Republic Iron and Steel Co.

Y. B. Haagsma, who was elected secretary of the Republic Iron & Steel Co. at the recent annual meeting, has been for some time the general auditor of the company and now holds both offices. Mr. Haagsma's advance represents what may be achieved by merit and hard work, unaided by friends or influence.

Coming by himself to this country from Holland when about 14 years of age, he first secured employment in the wholesale drygoods house of Crow, Hargardine & Co. in St. Louis. Three years later he went to work in the Bank of North America. In three years more the bank failed and he entered the iron business as kookkeeper for the Missouri Furnace Co., makers of Bessemer pig iron, in St. Louis. From the service of this company he was called to Chicago by the Joliet Steel Co.



and soon became auditor of that concern and was also auditor of the Illinois Steel Co., after the Joliet Steel Co. was absorbed. Subsequently he was auditor of the Deering Harvester Co., but had resigned from that concern and was engaged in the promotion of some industrial combinations when offered the position of general auditor of the newly formed Republic Iron & Steel Co. in 1899. To this responsibilty is now added the office of secretary. Besides his constructive and executive ability Mr. Haagsma's distinguishing trait is his constant and ungrudging giving of time and labor to help the deserving.

Proposed Settlement of Chain Makers' Strike.

(Special Telegram.)

PITTSBURG, Sept. 25.—Indications now point to an early settlement of the chain makers' strike. At a conference held here this week between representatives of the National Chain Makrs' Union and representatives of the Standard Chain Co. and the independent manufacturers a proposition was secured which will be submitted to the men this week. If two-thirds of the lodges accept the proposition the strike will be formally declared off. On Sept. 1 the men went on a strike on the refusal of the manufacturers to grant the advances asked for in their new scale, ranging from 10 to 40 per cent. The manufacturers refused to concede a uniform wage rate and also refused to recognize the union in their proposition of settlement, but grant the men a slight advance. About 600 skilled mechanics are affected.

MR. DEPEW ON A EUROPEAN COMBINATION.

Senator Depew, from his extensive acquaintance in Europe and frequent visits to that continent, from one of which he has just returned, is a recognized authority on questions affecting the relations between the United States and European countries, and what he has to say elsewhere in the *Press* on those subjects will be read with much interest. Mr. Depew remarks, as others have done, the change in tone in Europe when speaking of the United States and its people. Indifference and sneers have given place to respect and exaggerated ideas of our wealth and fears of what this country may do in the future.

Those fears arise from our industrial growth, as all intelligent men in Europe know that the United States does not want more territory and is peaceably inclined. The talk of a European combination in industrial matters against the United States is childish. Mr. Depew pronounces it an impossibility. That is evident from the discussion in European capitals of the proposed new tariff law prepared by the German Ministry. The Russian government has made it understood that if Germany enacts such a law there can be no commercial treaties between Russia and Germany. In Vienna, where most of the talk about a combination against the United States originated, the proposed new German tariff has been severely denounced and warning given that its enactment would break up the Triple Alliance. Italy, France, Belgium and other countries have threatened retaliation on Germany if the bill becomes a law.

That all goes to show how impossible it would be for them to unite in any tariff war on this country. Individual action may be taken, but the United States is quite capable of looking out for its own interests. No European nation buys a dollar's worth of merchandise from the United States to benefit this country. They buy nothing of us that is not to their own interest, and agricultural products which they can get nowhere else and must have form the great bulk of their purchases. A tariff war against us under such circumstances is entirely out of the question.

The danger of lowering our tariff to furnish a dumping ground for the surplus products of European trusts is pointed out by Mr. Depew. Trusts are much more numerous in Europe than in the United States, and Germany in particular, as Mr. Depew states, is almost entirely in the control of trusts and syndicates. The Babcock idea of destroying American trusts by helping to build up those of German, and Europe finds no favor anywhere excepting with free traders, though it is hailed with joy in Europe.—[Philadelphia Press.

An 18th Century Stove.

An old stove is now on exhibition in the hardware store of H. S. Cleveland, at Minneapolis. The stove is owned by the Michigan Stove Co. and was made in 1767. It is described as an old-fashioned box stove, standing upon legs or end braces similar to those of a sewing machine, only that they are about half as high as the latter and are of much heavier casting. The total weight of the stove is 500 pounds, and the iron from which it is made is seven-eighths of an inch thick in all parts. It is 3 feet long, 34 inches high, and one foot wide, with a hearth extending in front. The only opening on top is a small hole for the pipe. It was evidently used for heating and cooking, although without lids. The oven would hardly accommodate a turkey, even of modest dimensions. It measures 14½ inches in length, 12 inches in width, and 6 in height. The floor of the oven is removable, thus making greater heating capacity. There is no grate in the bottom, the fire being built directly on the bottom of the stove, the heat passing from below the oven, back of it and over the top to the pipe. The outside has scroll designs and crowns in relief, much after the fashion of stoves today, and on both sides cast with the metal are the words: "Hereford Furnace, Thomas Maybury, Manufacturer, 1767." The stove is well preserved in spite of its almost 150 years of age.

Commenting on the above the *Bulletin* of the American Iron and Steel Association says: "Thomas Maybury was a pioneer iron manufacturer in Pennsylvania and New Jersey in the 18th century. Hereford Furnace was one of his enterprises. It was located in the Schuylkill Valley, Pennsylvania, and was in existence and active as late as 1788. Mr. Maybury was himself a man of much prominence."

THE "MONESSEN SYSTEM" FOR TIN PLATE MILLS.

The Monessen system of rolling black plates, which is to be introduced in the non-union tin mills of the American Tin Plate Co., is the invention of W. H. Donner of Pittsburg, now president of the Union Steel Co., and formerly president of the National Tin Plate Co. at Monessen, Pa. The plant, in addition to slightly reducing the number of men required for a given stand of rolls, materially reduces the percentage of breakage, while the tonnage is greatly increased. The method makes specialists of the men employed at the rolls, and constant practice at one kind of work enables them to become more skilled than is the case when working under the system in vogue at all the mills controlled by the Amalgamated Association.

The Monessen system would have been adopted several years ago in all the mills of the American Tin Plate Co. but for the almost absolute control which the Amalgamated Association had of the trade. Had that body been a progressive labor organization it would have permitted the adoption of this system as one of the steps in the line of progress in tin plate manufacture. In February, 1898, this method was adopted in the Monessen plant, and on December 6 of the same year a patent was issued to the inventor, protecting all rights.

The system can be used on three, four or five stands of rolls, although the simplest application involves the use of either four or five stands. Where five stands of rolls constitute a unit, the first two stands will do all the roughing; on the third stand the pairs will be rolled, on the fourth the fours and on the fifth the eights. The roughing is divided between two stands of rolls because the roughing is so much more severe. The work is continuous with each stand, more than one series of bars being rolled at a time. With the five stands there will be four series of bars or packs worked at any given time. The basis of the patent is that there is a plurality of series of bars under treatment all the time, and in no other way can the rolls be made to receive the regular heat treatment so much desired in the rolling of black plate, so that they will remain always of the same contour and will not vary in temperature.

The operation is as follows: A heat of bars is put into one of the two furnaces standing opposite the first two stands of rolls. When they have reached the proper temperature they are withdrawn and roughed. A few are roughed on the first stand and then a few on the second, then back to the first again in order to divide the work evenly between the two stands. When two bars have been roughed they are matched and the pair put into the first of the pair of furnaces opposite the third stand of rolls. Meanwhile the other two furnaces opposite the two roughing stands are charged with bars. The first roughing operation ends with a heat of bars in one of the first pair of furnaces, ready to be roughed, while the other of the pair of furnaces is ready for the third heat of bars to be started. The first of the pair of furnaces opposite the third stand of rolls is full of pairs ready to be rolled. The next operation is to roll these pairs, putting them back doubled, into a furnace of the next pair.

During this time the second heat of bars is being roughed, and the third heat charged. The next operation is to roll the fours on the fourth stand of rolls, putting them back doubled into a furnace of the last pair, while at the same time the second series (in the shape of pairs is being rolled on the third stand, and the third series in the shape of bars is being rolled on the first two stands; while the fourth series (the cold bars) is being charged into the furnace. The next operation, which completes the chain, is to finish the first series in the form of eights, while the second series is being rolled and doubled into eights, the third series is being rolled and doubled into fours, the fourth series is being rolled and matched, and the fifth series is being charged into the furnace. The whole system is now in operation, and subsequent practice is simply to keep up the work in a regular and orderly manner, new heats of bars being continuously charged. Every time a new heat is charged each of the preceding heats is advanced one step. The work is kept up continuously and each stand of rolls is always doing the same work.

Each pair of rolls is turned for the work it has to do, and the passes are therefore all parallel at all times. In any pair of furnaces, one of them will be continuously receiving cold packs, while the other is supplying hot packs, during the period, while in the next period their relative periods will be reversed and so on. A very important feature of the practice is that, as the packs are taken from a furnace and rolled, they are not put back in the same furnace, but into another furnace. In the ordinary practice the packs are put back cold into a furnace from which hot packs are withdrawn, with the effect that portions of the hot packs are liable to be chilled, and will therefore roll irregularly. To avoid this great skill is required of the heater, which is now done away with.

Each roller or catcher will always be handling either bars, pairs, fours or eights, and will acquire skill in his one particular branch. Between the third and fourth stands is stationed a doubler with his doubling shear, and another between the fourth and fifth stands. The first named will be doubling fours all the time, the second will be doubling eights all the time. Each will be a better workman, other conditions being equal, than if he doubles fours for a time, then doubles eights and then helps at the furnace.

Either three or four stands of rolls can constitute a unit, and two stands of rolls have also constituted a unit, the first stand rolling pairs and doubling alternately, while the second stand fours and eights alternately. Between the two mills is placed a doubling shear and the doubler is engaged in doubling fours and eights alternately. As a result of this practice the scrap at the doubling and squaring shears is materially reduced.

Charcoal-Fired Blast Furnaces in Croatia.

The charcoal-fired blast-furnace, 14 m. (46 ft.) high, at Trgowe and Beslinac, in Croatia, works under very economical conditions. The brown hematite and spathic carbonate ores, with 40 to 58 iron and 1 to 2 manganese content, always roasted before being charged into the furnace, cost about 1s. 2½d. per ton at the mine, while the carriage to the works is double that amount. The proportion of flux required varies with the silica content of the ore, but averages 45 per cent of the pig turned out, while its cost does not exceed 1s. 7d. per ton of iron produced. The charcoal is made for 24s. per ton; and on an average the consumption amounts to 115 per cent of the pig with only three tuyeres and blast-heated to 250 degs. C.; but the process of distilling the wood in a close chamber with recovery of the by-products is shortly to be introduced, when the cost will be appreciably diminished. Labor costs about 2s. 10d. per ton; and the general expenses are about double that amount, so that, including carriage to Fiume, a ton of iron can be put on board for 56s. At present the daily output per furnace is ten tons of high-class gray foundry pig; but the furnaces are soon to be reconstructed with six tuyeres for being blown with a blast heated to 700 degs. C. by Cowper stoves, when it is hoped that the cost will be brougha down to 40s. per ton, remarks M. J. Demaret-Freson, Ingenieur principal du Corps des Mines and Professor at the Mons School of Mines, in the Echo de l'Industrie.—[Engineer, London.

The Imperial Steel Works in Japan.

The *Japan Times* gives the following particulars concerning the Imperial Steel Factory at Wakamatsu: The works were founded in April, 1900, and commenced in February last the manufacture of pig iron, and in May the work of manufacturing (about 40 tons a day) Siemens steel. Two of the five roll-mill plants having been completed, the production of medium and small rails and plates was started towards the end of June. The other plant will be completed by the end of September, and the manufacture of large rails and other ware will be started at once. It was also stated that it was estimated that 90,000 to 100,000 tons of steel could be produced in a year, when all the arrangements shall have been completed, and the operations can be carried out to their full extent. Next year the factory will use iron obtained from Akiya in Echigo, where ore has been found stated to be equal in quality to the best imported material.

The Pan-American Exposition-IX.

(Staff Correspondence.)

BUFFALO, Sept. 24.—The Otto Gas Engine Works of Philadelphia has one of the largest lines of gas and gasoline engines I have had the pleasure of seeing at the Exposition. There is sufficient space to bring all the engines within a very short distance of the hand rail and the visitors have a good opportunity for a close acquaintance with the engines: all the engines are in operation during the day, two of them operating the arc and incandescent lights illuminating the exhibit. The following engines are on exhibition: One 3½ actual, 4½ indicated h. p. vertical gasoline engine. One 3½ actual, 4½ indicated h. p. vertical gas engine and triplex pump in operation, pumping capacity 5,500 gals per hour, 85 ft. high. One 5 actual, 6 indicated h. p. horizontal gasoline engine. One 12 actual, 14 indicated h. p. horizontal gas engine. One 12 actual, 14 indicated h. p. special electric light engine in operation direct coupled to a Diehl multi-polar generator, capacity 100-16-candle power lamps. One 20 actual, 25 indicated h. p. gas engine, special electric, running one Diehl multi-polar generator having a capacity of 200-16-candle power lamps. One 60 actual, 72 indicated h. p. gas engine with self-starter. One gasoline portable engine, 9 actual, 12 indicated h. p. for farming purposes, running thresher, grinding and cutting feed, sawing wood, etc.

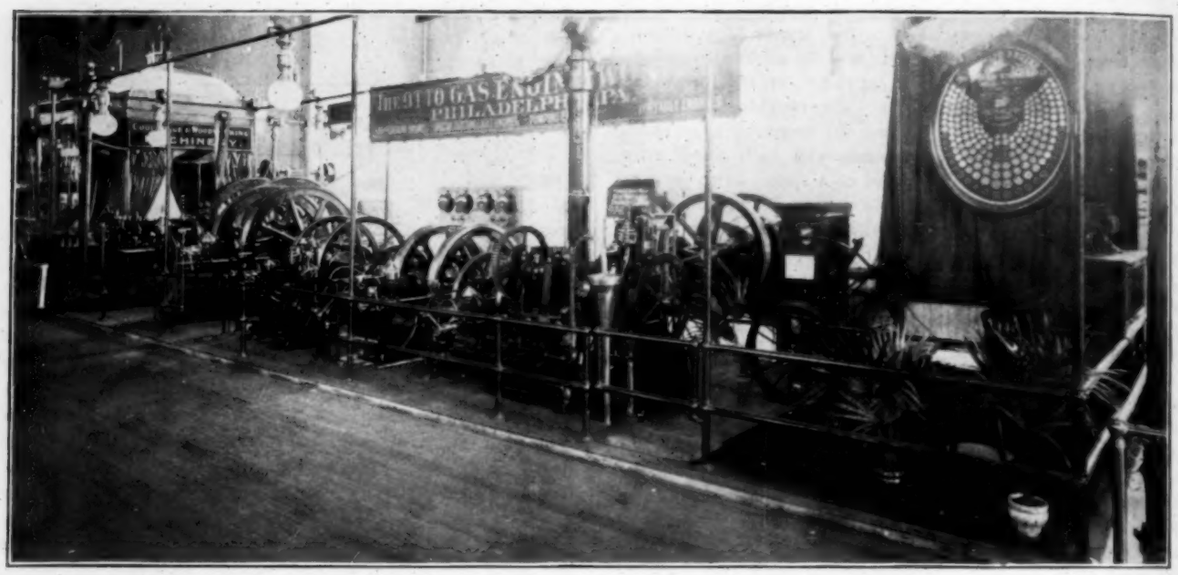


FIG. 1.—EXHIBIT OF OTTO GAS ENGINE WORKS, PHILADELPHIA.

The 3½ actual h. p. gasoline engine, of vertical pattern, takes up a minimum amount of floor space—30 x 30 inches. The amount of fuel is governed according to the load carried and the sparker operates only when the charge is admitted. The 3½ actual h. p engine coupled direct to the triplex pump, has the advantage that it can be used for other purposes as well as pumping; the pump being thrown in and out of gear by a friction clutch which allows the engine to run free without turning the pump. All types of these engines are made to run with gas, gasoline or natural gas. The larger sizes shown, of 5-h. p. and upwards, are of the usual four or Otto cycle principle, and of horizontal pattern. It is not any too common an experience to find a single cylinder gas engine running electric lights with the required steadiness but this seems to be done satisfactorily with the 12-h. p. engine on exhibition. The engine has a friction clutch coupling so that the dynamo may be thrown into action at night, and the engine used for other purposes during the day.

A Pneumatic Tool Exhibit.

The Philadelphia Pneumatic Tool Co. of Philadelphia has a large collection of air-driven tools; hammers, drills and rammers, etc. A pneumatic holder-on, as it is termed, is also shown. This is a tool to take the place of the old-time sledge, or other cumberous weight, carried around the inside of a tank or boiler as an anvil support to the rivet while it was being vigorously upset by the hammerman on the other side. The holder-on has a button, to fit the rivet, and at the opposite end an extension to abut against the circumference of the boiler. The tool will telescope about 3¾ inches and the button-set holds the rivet solidly and continuously as long as it is needed—something that the human holder-on could only do with considerable toil and a certain amount of skill. The rotary drills on exhibition are capable of reversal by a simple turn of the throttle; this makes them available for tapping, flue rolling and similar work. I am told that these flue rollers will roll any size flue up to six inches diameter. The rammers are for foundry use in ramming up flasks, etc. They are made in a small as well as a large size for hand operation in general foundry work. The lighter machine weighs twenty pounds, strikes 250 to 300 blows per minute, using air from 60 to 100 pounds pressure, and demanding about 11 cubic feet of air per minute. The larger hand machine weighs 45 pounds and strikes 250 to 300 blows per minute, using air pressure at from 50 to 100 pounds per square inch, and only 15 cubic feet of air are consumed per minute in continuous operation. Both these machines are controlled by a small throttle lever, under the thumb of the user, and the speed and force of the blows may be varied at the will of the operator. A still larger size is shown in operation. This is especially designed for heavy work where a crane or some other overhead support is to be obtained. It is claimed that the maximum force of the blow delivered by this hammer is over 350 pounds, while the average blow from a hand rammer is estimated at 40 pounds. The tool uses air at a pressure of 80 to 100 pounds per square inch and strikes from 250 to 300 blows per minute. The entire regulation is under the control of the one valve and the molder can thus regulate the force of the blow to a nicety and start and stop the rammer at will. The total weight of the rammer, with feed screw for adjusting height of rammer to suit the work and follow up the sand as it is filled in, is 300 pounds. A rammer is suspended over a box of molding sand, connected with the air supply, and everything is on hand in the exhibit to show the capabilities of the tool which may be seen at the extreme left of the illustration.

The most spectacular feature of the exhibit does not come out strongly in the half tone except so far as the chips to be seen on the stand at the front. I refer to the chipping and calking hammers and their work. When I visited the exhibit a boiler plate, ⅜ inch thick, stood on edge resting near the table: strips had been cut off this plate ½ inch thick, or deep, at the rate of six inches to the minute and a pressure of 80 pounds. A 6-inch strip of mild steel, 6 x 1⅜ inches, was exhibited: this had evidently been chipped from a ⅜ plate. I have done some chipping myself and have therefore had a continuous interest in the methods that from time to time have pushed the chipping hammer and the cold chisel to

the wall. These hammers driven by compressed air are by their general convenience taking the little work that has been left for chipping in our shop processes. No one who has had any experience of the old practice will have many regrets at the advent of a much easier method.

Air under the pressure used for the proper exhibition of these pneumatic tools is capable of making considerable noise, if allowed to escape through an orifice of suitable shape, and the young men who were at this exhibit had rigged up a length of pipe that was occasionally brought into use to call the attention of visitors. The result was not particularly musical but from the standpoint of the designer it was certainly a howling success.

The Morton Mfg. Co.'s Exhibit.

The Morton Mfg. Co., Muskegon Heights, Mich., has on exhibition a 20-inch keyseating machine and a 24-inch shaper. The Morton keyway cutter is a fairly familiar shop tool. The cutter bar is supported both above and below the work, and the bar cannot spring away from the cut at any position of the cutter. The depth of the key-way is measured with a micrometer and the work is centered by the bore with an adjusting centering attachment which also provides a bearing on each side of the cutter bar, and is adjustable to the various sizes of cutter bars. There is an automatic screw feed which is adjustable. The cutter may be fed by hand or automatically at the convenience of the operator. The taper of the key-way is indicated by a pointer and scale and is adjusted by means of a hand wheel. The key-way may be cut on a taper, which is deepest at the top or the bottom of the hub, as may be desired. The upper adjustable arm for the cutter bar bearing can be swung around to remove work from the machine.

The shaper is not so well known to me at least, in the design shown by the Morton Co. The ram is of square section with a bearing on all four sides and the head is arranged to hold the tool firmly while cutting on the inward stroke. Thus all the joints are drawn toward the machine instead of being forced apart when the tool is taking a cut. A bearing is furnished with the machine which is placed between the vise and the frame of the machine. This forms a stop against which the work can be placed and the thrust of the cut is taken directly on the frame. With this provision I am prepared to be told that cuts have been made 1½ inches in width and 1-12 inch in thickness without vibration. The other features of the machine are not noticeably different from modern shapers.

A Dangerous Exhibit.

The Gould Storage Battery Co., of Depew, N. Y., has a collection of batteries and component parts that will be of interest to those who have had any acquaintance with this branch of the electrical industry. There was, however, little in the original exhibit of a character calculated to attract popular attention, and in this respect it failed to appeal to those who idly stand and watch the wheels go round elsewhere. Occasionally some one would come along and pick up a delicate grid and examine it, while a cold chill afflicted the exhibitor, who would try to get it back without damage. Later the gentleman in charge got out an impressive sign: "Danger. These plates are charged. Don't touch." In the event of injury the plates and the exhibitor are likely to suffer more than the meddlesome visitor, and there is no reason to doubt that the sign will attract attention as well as restrain carelessness.

The Iron City Engineering Co., of Pittsburg, reports that contracts have been closed at Uniontown, Pa., and College Hill, Beaver Falls, Pa. The College Hill plant consists of a 50-h. p. Walrath gas engine; a 30-k. w. Warren alternator; a switchboard manufactured by the Crouse-Hinds Electric Co., 20 Manhattan series A. C. enclosed arc lamps and pole line complete. The Uniontown contract consists of four 150-h. p. tandem compound direct-connected Ball engines; four 100-k. w. Crocker-Wheeler generators; one 6 panel switchboard of Crouse-Hinds construction, also conduit and wiring for a 12-floor building.

FIG 2.—EXHIBIT OF PHILADELPHIA PNEUMATIC TOOL CO., PHILADELPHIA

The Phœnix Iron Works Co. Meadville, Pa., has given a contract to the Penn Bridge Co., Beaver Falls, Pa., for the structural work of a new boiler shop, intended to double their present capacity. They are also erecting an addition to their foundry and an increase in the engine department is contemplated.

The new foundry of the Prizer-Painter Stove & Heater Co. of Reading, Pa., has been placed in operation.

The Cranberry (N. C.) Iron & Coal Co. has purchased the Carnegie iron furnaces at Big Stone Gap, Va.

ELECTRICITY IN THE MACHINE SHOP.—II.

The two illustrations are of widely different tools and therefore are of greater interest as showing the availability of electric power in machine shop work. The one view, Fig. 1, is of a Triumph motor, direct connected to a 500-lb. hammer; the other, Fig. 2, is an engine lathe driven from a similar source. The motor, built by the Triumph Electric Co., Cincinnati, is of either high or moderate speed type. The frame or field is of soft close-grained cast iron; the poles are of laminated construction, built up of thin sheet steel firmly riveted together after each sheet has been separately treated to prevent eddy currents. This treatment, by the way, is also applied to the armature discs and consists in producing an oxide coating on the surfaces to insulate the one from the other more thoroughly. The poles are cast solidly into the frame with the intention of getting a more complete and perfect magnetic joint and circuit than is likely to be obtained by any other method of construction. The armatures are of the ironclad, laminated-core, toothed type. The laminations, or discs of which the core is made, are of thin sheet iron notched on the circumference, so that, when mounted on a spider or shaft these notches form slots into which the armature conductors or windings are placed. On the direct-connected, and the largest sizes of belted apparatus, the discs are mounted on a cast iron spider of heavy section. This spider has a projection on the one end supporting the commutator, instead of the latter being held on the shaft as in the more familiar form. The armature is thus completely self-contained.

The armature coils are wound, insulated and tested before being placed in the slots, and when so placed are entirely embedded below the surface. In addition to the insulation of the coil, the slots are insulated by troughs of heavy fuller-board, mica and oiled paper. Hard wood wedges are driven into the slots over the coils to hold them firmly in place without band wires: this avoids the trouble due to the breakage of the bands as well as the danger of short-circuiting or grounding the coils in case of the band wire cutting through the insulation. The coils are so placed on the armature that no two of opposite polarity cross without an air space between them, and on all except the smaller sizes and for the higher voltages they are of solid bar copper.

The field coils are form-wound, the series coil being of bar copper, one turn to the layer, and designed to wind to the same height as the shunt coil. The latter is wound both ways from the center so that both leads are on the outside, thus tending to prevent the usual danger of short-circuiting where the under lead is brought out across the coil as commonly wound. The coils are mounted on the poles with spaces between the series and the shunt windings, allowing for free circulation of air, and are held in place by the pole-shoe.

The commutator is a vital part in motor construction and the segments in this machine are of hard-rolled or drop-forged copper. These segments are of ample area and present their full width for brush surface, providing for an allowance of at least one square inch for each 30 amperes to be carried.

The motor-driven hammer is operated by a machine running at a speed of 225 r. p m. It is controlled by means of field resistance for one-third of a reduction in speed and for a further reduction of 25 per cent by a regular speed controller in series with the armature. This gives a very elastic connection, permitting the operator to strike a heavy and a quicker blow or a light one at pleasure. The motor is elevated out of the way of possible injury and the position is sufficiently high to leave the working space perfectly free and at the same time not so far in the air as to interfere with the overhead crane or trolley service. The advantage of using the space above the tools, now frequently taken up with line shafts and belting, is equally well shown in the view of the lathe, and greater familiarity of the latter tool will the more plainly set forth the benefit of the electric drive.

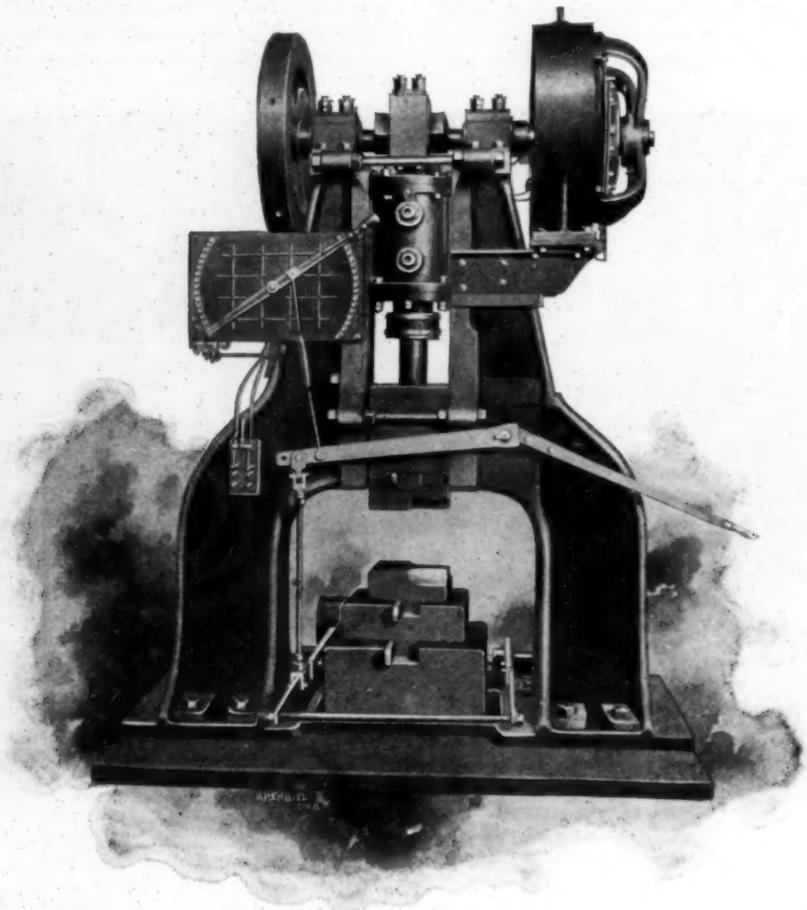


FIG. 1—500-POUND ELECTRIC HAMMER.

The illustration is a rear view of an ordinary engine lathe equipped with a Triumph motor. The motor is bolted to the back of the cabinet support and the armature shaft is extended and splined to fit a feather in a moveable collar or wheel. The collar rests against a large disc, which in turn, by means of bevel gears, rotates a belt pulley inside the lathe. This pulley is belted to the one on the main spindle, there being, of course,

no longer any need of the cone pulleys. By the aid of suitable mechanism the position of the collar on the disc may be varied by the lathesman and thus the speed of the lathe can be altered while the motor is at all times operating at full speed, and consequently at its best efficiency or economy. This gives the workman a chance to obtain a delicate change of the cutting speed that would be out of the question with the less flexible cone pulleys and thus the arrangement in highly favorable to the greater production of the machine. Anything which lessens the difficulties in the way of presenting the tools to the work, or permits a more effective adjustment of the speed to the cutting power of the tools, is a decided step toward cheaper production, because labor is in the average shop of much more concern financially than power or material. Along the line of the efforts from an electrical standpoint to make the combination of men and machines more effective, the engine lathe of the Triumph Electric Co. is well worthy of notice.

TRADE PUBLICATIONS.

The Blakeslee Mfg. Co. of Du Quoin, Ill., is sending out catalogue 11, devoted to the Blakeslee duplex steam pump. These pumps are made in a variety of forms for high and low pressure duty and in sizes up to 10 x 7 for the former, to 12 x 6 for the latter service. A page is given to the Blakeslee jet pump, which pumps water fifty feet high and will successfully handle fluids containing grit, mud, pulp, etc. The jet pump can be furnished in iron, bronze, lead, copper, or in any metal which may be worked with machine tools.

Two circulars have been received from the Fort Wayne Electric Works, Fort Wayne, Ind. Bulletin No. 1018 discusses the control and construction of the searchlight projectors manufactured by this company, and bulletin No. 1019 is descriptive of the series enclosed arc lamps for direct current circuit. The latter are made for street and factory purposes in brass or steel finish and with metal or poreclain reflectors.

The Wright steam specialities have been recently described in these columns. They are the product of the Wright Mfg. Co., of Detroit, Mich., and their peculiarities are fully set forth in the catalogue we have received. The catalogue is standard size, well illustrated, with description in detail of the safety water column, the feed water controller and safety water column, the emergency and the Victor steam traps.

A 7 x 10 volume, containing a hundred pages, treating upon the increased conveniences and economies due to the electrical operation of machinery in general and the qualities of Northern motors in particular, is termed by the Northern Electrical Manufacturing Co., Madison, Wis., catalogue No. 26, "Shop and Tool Equipments with Northern Motors." Some interesting papers by Mr. W. H. Tapley on "Electricity in Printing"; by Mr. W. S. Aldrich on "Electric Transmission in Factories and Mills"; by Mr. Louis Bell on "Application of Electric Power in Engineering Work"; the report of the American Railway Master Mechanics' committees on electric power, together with much miscellaneous information on the application of the electric motor to machines are included in the publication. The book is profusely illustrated with fine half tones; many of them being views of metal-working machinery. Altogether a very readable affair on a subject of increasing interest.

The hand bore keyseater made by John T. Burr & Son, Brooklyn, is the subject of a four-page circular. The improved keyseater will cut straight and taper keyways up to 1½ inches wide in bores not over 12 inches long. It is designed for general machine and repair shop work and is adapted to cut keyways in work of any size, weight or shape. On heavy work the machine can be removed from its pedestal and used as a portable tool.

Continuous Rolling of Beams.

The Carnegie Steel Co., at its Homestead, Pa., plant, has been conducting experiments along the lines of the continuous rolling of beams. At present the method in vogue requires a three high mill with various passes and the grooving of the rolls requires them to be made extra heavy while a very wide flange has not yet been successfully rolled on any of the beam mills. At the Homestead works the experiments referred to require sets of both horizontal and vertical rolls, the latter permitting an extra wide flange to be rolled on the beam. Instead of incorporating the horizontal and vertical rolls in one mill there will be successive pairs of these rolls, and the bloom from the breaking down pass will continue through the successive sets of rolls until the beam is rolled to the required size. At the Hoefflinger Hutte, in Germany, a mill was placed in operation on Sept. 1, which incorporates both the horizontal and vertical rolls in one mill. According to reports received the mill is being operated successfully. Should the experiments at the Homestead plant prove successful it is probable that a new mill will be built, probably at West Homestead, Pa., where the continuous beam mill will be erected. A very long building would be required for the installation of such a mill as it is at present outlined. In addition to lessening the cost of rolling much lighter rolls could be used than at present, and the percentage of roll breakage would no doubt be reduced to a minimum.

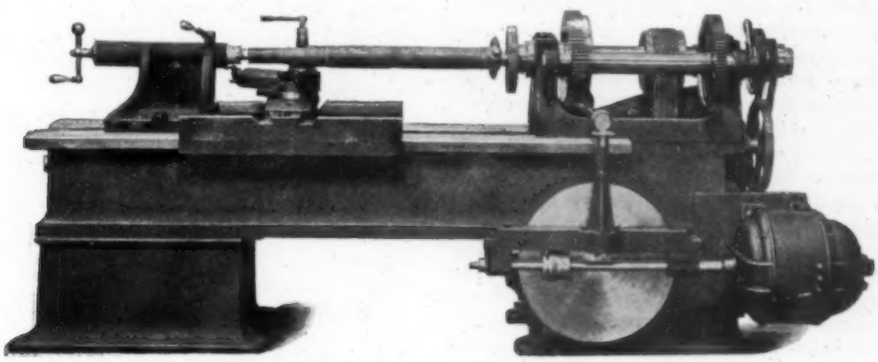


FIG. 2—TRIUMPH ELECTRIC CO.'S ELECTRICALLY-DRIVEN ENGINE LATHE.

Among contracts recently let by the Youngstown Iron Sheet & Tube Co., of Youngstown, O., are the following to the Lloyd Booth Co. department of the United Engineering & Foundry Co.: One 26-inch sheet train, one 20-inch double three-high bar mill, one 20-inch double three-high muck mill, two squaring shears, two lever shears, two roll lathes, one right hand squeezer with reducing gear, one left hand squeezer with reducing gear.

A charter has been granted to the Consolidated Mfg. Co. of Pittsburg, capitalized at $250,000 to manufacture steel novelties. The following officers have been elected: J. K. Skelly, president; I. Leonard Aronson, vice-president; W. H. Sykes, treasurer; B. H. Petter, secretary; directors, C. H. Beach, A. A. Nimmo, Harry Harris and Jacob Steinberg.

Catalogue No. 4 has been sent out by the E. W. Bliss Co., Brooklyn. It is 5 x 7¼, and contains 34 pages, in reference to the construction and operation of drop hammers and trimming presses. A detailed description of the geared as well as the gearless lifter manufactured by this company is incorporated in the catalogue.

DUST IN BLAST FURNACE GASES.*

BY ADOLPHE GREINER.

The present paper is a sequel to the communications I have had the honor of presenting to this institute on certain former occasions—in particular, the May meetings of 1898 and 1900. Its object is to complete the information which may be found useful to all persons interested in the employment of blast-furnace gas in gas engines. From another more personal standpoint, it will serve to acquit me from the undeserved reproach of having incorrectly stated that gas engines on the Cockerill-Delamare plan could utilize raw, impurified blast-furnace gas.

To begin with, I wish to remark that my former communications have never had any other basis than facts—proved in each case, and were not founded on more or less hazardous speculation. In saying as I did at last year's spring meeting, that we had at Seraing a 200-h. p. engine, driving an electric motor since April, 1898, without the cylinder having been once cleaned, I simply enunciated a positive fact, and I may add that now, after three years' continuous work, the engine runs day and night without having had to be stopped even once for the purpose of cleaning the cylinder. Experience showed us later on the cause of this result, with which I shall deal presently.

On the other hand, the 600-h. p. gas-blowing engine of a similar type to the one exhibited last year in Paris, did not meet with any difficulty in working, and my last communication of May 9, 1900, was simply a statement of practical results obtained at our works.

We had hardly started, however, in August, 1900, with the first of nine 600-h. p. engines at Differdingen (Luxemburg), than, after three weeks' running, we experienced the fatal results of the excessive quantity of dust contained in the blast-furnace gases at these works. We were thus led to examine the amount of solid matter impregnating the gas, and to our astonishment found at Differdingen from 4 to 5 grams per cubic meter, while similar researches made subsequtntly at Seraing did not reveal the presence of more than from 0.25 to 0.50 grams in the gases from our own furnaces, or, say, ten times less than at Differdingen. The cleansing of the gas thus became a necessity, and we shall see further on how an absolutely perfect and extremely simple solution of the problem was discovered. We were thus led to look more closely into the nature of the gases outside Seraing, and results were obtained by our chemist in eight or ten establishments where he was allowed to analyze the blast-furnace gases for dust.

The first remark called forth by these results is that the degree of pureness of blast-furnace gases varies greatly with different works, and this is easily to be understood, from the different natures of the ores smelted. Generally speaking, the gases are purer in works producing hematite pig irons from hard ores in lumps, or mixed with purple ores, when, as is the case at Seraing, the dust from these last (always rather heavy) is deposited in the pipes and chambers nearest the blast furnaces, and is not carried any very great distance. On the contrary, the gases contain large quantities of fine dust in works which deal with oolitic ores, whose impurities consists mainly of a kind of clay which the heat causes to dry, and which the gaseous current carries to great distances—such being the case at Differdingen, and in general throughout the Luxemburg district.

A second important remark is the following: It is a mistake to suppose that the dust can be efficiently separated by depositing in long passages, vertical pipe arrangements or chambers of large capacity. The dust is often reduced to such a state of tenuity that the gas continues to carry it in spite of all checks of the kind referred to, and the clouds of white smoke issuing from the tops of high chimneys prove that the gas after traveling hundreds of yards still contains appreciable masses of light solid matter.

I will now proceed to describe how the cleansing of the gas was accomplished at Differdingen. A choice had to be made between two methods. The first, which may be termed the "static" method, consists in the use of a series of scrubbers or sheet-iron towers containing coke or sawdust, cooled by a spray of water, which plant, first introduced by Mr. Thwaite, is in use in England, and also under different forms at the Oberhausen blast furnaces in Germany, at Dudelingen in the Grand Duchy of Luxemburg, and elsewhere. This method is somewhat cumbersome and costly to put down, requiring the use of an aspirating fan or exhauster, but it gives perfect results as regards cleaning.

The second method, which we should name the "dynamic" one, is based upon a reaction due to centrifugal force, provoked betwen the gaseous mixture and a spray of water injected into a suitable apparatus. The liquid and solid particles thrown against the periphery of the apparatus are expelled by an opening in the envelope, while the gases which have been mixed and agitated by the action of rotating blades, escape through the exhaust orifice in a perfectly purified condition. Different analyses made at Horde on gases treated by M. Theisen's apparatus leave no doubt as to this result, the quality of dust per cubic meter of gas being sometimes reduced to less than 0.01 gram.

At Differdingen the principle of "dynamic" cleansing has been very simply carried out by using an ordinary centrifugal fan, 1.50 m. in diameter, running at a speed of 900 revolutions per minute, through which the whole of the gases are passed, being drawn in by the central apertures. Water is supplied by a pipe 26 mms. in diameter, opening into the axial part of the fan. The gas alone is driven out by the fan discharge, the water, charged with dust, being led off by a pipe 50 mms. in diameter from the lower part of the fan casing.

The gases which, before being brought into the fan, contained 4 grams of dust per cubic meter, leave it containing only 0.25 gram, and are in a proper condition for use in a gas engine without further treatment. The quantity of water required is very small, and varies with the degree of cleanliness to be obtained. With 10,000 liters of water per hour, the dust in 10,000 cubic meters of gas can be reduced to 0.30 gram per cubic meter, and with 15,000 liters to 0.20 gram, or, say, 1 to 1½ liter of water per cubic meter of gas. The apparatus takes up little room, and is by no means costly. For an outlay of 10,000 francs ($2,000) the gas can be cleaned for six 600-h. p. engines.

Mr. Meier, the general manager of the Differdingen Works, intends to carry out more completely the cleansing operations, by sending the gases leaving a first fan through a second one; experience can alone decide whether this improvement is necessary.

It may be of interest to point out that the "dynamic" method of cleaning possesses the advantage over the ordinary one of supplying the gas at a certain pressure (from 20 to 25 centimeters water-gage), by which it becomes possible to carry it in sufficient quantity through pipes of comparatively small diameter, and thus reduce the first cost.

In conclusion, facts have shown that the cleansing of blast-furnace gases can be effected by simple and economical means. No reason exists why the principle should not be carried further and the gases be cleansed before use in the blast-heating stoves or boiler flues. I venture to call the attention of all blast-furnace owners to the immense economy to be realized by this process, which constitutes a new advance in furnace management—so true is it that progress in one direction calls forth concomitant results in another.

The Quincy Engine Works, Quincy, Ill., which was organized to manufacture the Williams improved vertical engines, report that construction on the plant is progressing favorably. A machine shop, 210x145 feet, a foundry, 130x100 feet, and a two-story pattern shop and store house, 100x50 feet, are being erected. The machine shop is to be served with a 20-ton traveling crane, covering a floor area of 200x50, with a maximum lift of 35 feet. The floor of the foundry is to be served with a similar crane, with a maximum lift of 25 feet. A special feature of the shop, is an erecting foundation, on which all parts of the engines will be assembled in place before shipment, thus insuring accurate work and perfect alignment when complete. The machine tools are all of new design and heavy pattern, especially selected for the special work they will have to perform.

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*A paper read before the Iron and Steel Institute of Great Britain. Mr. Greiner is connected with the Societe John Cockerill, Seraing, Belgium.

SOME WONDERS OF INVENTIVE GENIUS.

One of the essential elements of a patent is the adequate character of the claims; modesty is absolutely of no avail in these cases and the prudent inventor goes for everything he can reasonably expect to reach. An Englishman and an American have recently shown such remarkable diligence in this regard that their efforts are worth wider publicity and consideration. We are indebted to the *English Mechanic* for the following paragraph:

"Some interest has been aroused at Walsall by remarkable claims to discoveries made by a local resident, Mr. Enoch Gittings, Jr., of the Wisemore Iron and Steel Works. It is the extraction of a new iron—a subject to which the inventor says he has devoted himself for the last eighteen years. A distinctive feature claimed for it is that it is made without puddling, and is absolutely pure. Any description of iron ore can be used, as the pure iron only is extracted, and the refuse separated from it. It is claimed that the finish is much superior to that of any other class of iron, and has stood greater tensile strain and elongation tests at Lloyd's than any other iron. It is also capable of more reduction of area, is almost as soft as lead, and will do anything that ordinary iron or steel will do, and more, as it has in its constitution all the qualities of both. It is said that the iron is already being brought into practical use by some of the Walsall manufacturers, and that the latter, having satisfied themselves of its value, are willing to pay as much as £20 a ton for it. Nothing is stated as to cost of production, but Mr. Gittings states that he has personally visited America, and brought his discovery before the notice of some of the ironmasters there, and that the latter have made big offers to secure the right of manufacture. For the present, however, he prefers to retain his rights as inventor."

A good deal depends upon the manner of telling the story. Perhaps Mr. Gitting's invention would have had more sensational announcement had it received the attention of the ubiquitous newsgatherer who sent out from Pittsburg an account of the ingenuity of Dr. P. Coss, of Chicago, for publication in the New York *Journal*. We are told that the doctor's discovery will revolutionize business; that "gold can be obtained from submerged deposits, heat and cold can be produced at will by the inventor, and cold storage plants established at small cost. A new era is promised for the horseless carriage. All this is founded on a union of magnetic and electrical forces. The model consists of three large magnets, almost covering a cylinder of magnetic wires, two wheels are attached at the front of the instrument. The whole contrivance is enclosed in such a way that the mechanism is concealed." The designer was candid enough to admit, after much persuasion, that inside the device was "an electrical troper, an invention devised specifically for the production of cold energy. Contraversion wires are used to produce heat, which is then in turn applied to store the cold."

This is, of course, perfectly clear to anyone who understands this sort of thing, and the rest must patiently await the time when the warm energy of the promoter shall be applied to the troper and the cold contraversion take effect on the investor. It was further explained that "by placing a large shield, made on the principle of marine magnets, over the machine and connecting it with a special battery, any particles of floating gold in the water were attracted and settled on the cap. Cars are to be built for cold storage purposes which will be lined with electric wires, between which magnetized steel chips will be placed. Water is then allowed to drip through pipes on to the wires. The machine is then set in motion and at once generates cold until the interior of the car is lined with ice."

The inventor claims "that the positive pole of electricity is cold and not heat." "In place of generating heat," said the doctor, "I merely freeze my tension."

This sounds simple enough. We trust, however, that the chilling process will not extend to the unknown genius who supplied the story, and that he will continue to dish up for our edification these curiosities of high inventive skill.

The Olds Motor Works of Detroit, Mich., will build a factory, 120x600 feet in Lansing.

ENGLISH AND AMERICAN CAST IRON PIPE WORKS.

Clark-Harrison & Co. of 72 Fenchurch street, London, who are foreign agents for the United States Cast Iron Pipe & Foundry Co. and for the A. P. Smith Mfg. Co. of Newark, N. J., send the following interesting communication to the *London Engineer* on some contrasts in pipe foundry practice in the United States and Great Britain:

Sir: We have read with much interest the articles that have recently appeared in your valuable journal on the subject of "Cast Iron Pipe in the United States," and beg leave to congratulate you on the thoroughness and correctness with which your special commissioner has treated the subject.

The writer has had considerable experience in the manufacture of cast iron pipes in the States, having acted for four years in the capacity of vice-president and general manager of the South Pittsburg Pipe Works, to which your commissioner refers, and it occurred to him that perhaps you and your readers would be interested in a comparison of British and American pipes and foundry practice. He has therefore written the enclosed, which you are at liberty to use as you see fit.

(1) *Extra Length.*—All sizes of American pipes measure in length about 12 ft., exclusive of socket, whereas the small sizes of British pipes are only 9 ft. It is very evident that the extra length of American pipes is an advantage. The expense per length is in both cases practically the same for inspecting and testing with the hydraulic press, for transporting to the trench, for lowering into the trench, for making the joint with the necessary supply of lead and hemp, and for excavating several cubic feet of earth under the socket, so that the joint may be properly calked. There are in each mile of, say, 10-in. diameter pipes, 587 lengths of British pipes, and 440 lengths of American pipes. Hence, if the total of this expense is "B" shillings for one length of pipe, it would be per mile 587 "B" shillings for British pipes, and only 440 "B" shillings for American pipes; that is, the extra length of American pipes reduces the expenses of laying by 147 "B" shillings per mile, which is a saving equal to exactly 25 per cent of the cost of laying British pipes. Nor is this the only advantage. In a mile of British 10-in. pipe there are 147 more sockets than in a mile of American 10-in. pipe. The socket of an average 10-in. pipe weighs 50 lbs., or more; hence, by using American pipes of the same thickness of shell, you would effect a saving in metal of 147 times 50 lbs or about 3¼ tons in every mile of pipe purchased.

(2) *Turned and Bored Pipe.*—The only form of joint used in the United States by water works and gas works is the ordinary socket and spigot calked with hemp and lead. It is considered far superior to the turned and bored joint used so largely in Great Britain, for the reason that the latter fails to allow for expansion and contraction, and renders the line of pipe so rigid that the slightest settling of the ground is likely to cause either a fracture of the pipe or a leaky joint.

(3) *Cutting End off in Lathe.*—This is required by a large proportion of British specifications, on the principle that some slag or other impurities are invariably retained in the top of the mold, rendering it necessary to cut away that portion of the casting. In American practice it is not found necessary to cut off the spigot ends of the pipes, for reason that the iron which is used is sufficiently high in graphite, carbon, silicon, and phosphorus to render the iron mixture so fluid when in molten condition that the slag and impurities rise freely to the top of the ladle, and are not allowed to enter the mold.

The fact that American foundries have been making a satisfactory quality of pipes for more than half a century without resorting to this practice of cutting off the spigot ends, would be sufficient evidence that it is unnecessary, provided a proper quality of iron is used. Hence, why do British makers incur this extra expense in manufacturing, and so place them at a disadvantage in competing against American manufacturers?

The plant of the Continental Iron Co. at Niles, O., is being dismantled and the machinery will be sold by a second-hand machinery dealer at Pittsburg, Pa.

SUGGESTED AT THE SHOP.

BY F. O. REMAN.

I have just as much respect for interchangeable work as any one of my acquaintance. To make a maximum number of pieces at a minimum cost and to have each of them fit closely to specifications comes near to being the highest form of industrial art; and work of this class is within the scope of that modern machine shop development that is getting common in this country. There is one shop tool that to my mind deserves more credit in this particular than it usually gets. It is sold at a low price and is correspondingly common. It is interchangeable within narrow limits, and yet, with all the familiarity that goes with constant use, few of the men who are handling steel scales know how they are made I have been in shops where these are turned out in goodly numbers, but I have not had the cordial invitation to examine the process of manufacturing this line of goods that has usually been extended to other departments of the same plant. Of course there are good reasons for this action in all probability.

* * * * *

John Hope of Providence, R. I., took out a patent some time in the sixties for a means of engraving steel scales. This was done by a pantagraph on the same plan generally adopted for engraving copper rolls, in calico printing. The Hope machine, as I am given to understand, used a reciprocating bar with a number of diamond or other marking points, one to every inch. All were operated from the one stylus which moved over a space about eighteen inches long, divided into sixteen parts. The steel blank was first covered with a wax or varnish and then graduated. The lines were afterwards etched in an acid bath, the protective covering being removed as a last operation. A company was organized in Middletown, Conn., for the manufacture of steel scales by this process, but it seems to have made little or no headway and soon collapsed. Hardened scales are, in fact, of much later introduction to the general public if my own experience is any guide. Graduating may be done by other devices than the pantagraph, and the divisions may be copied from a screw as well as another scale.

* * * * *

I had occasion to get into the scale-making business at one period. My productions in that line were not very elaborate, but they gave satisfaction to the people who paid the bills and that is the main test. The scales were to be used in advertising and a high cost was therefore prohibitive from the start. Several lengths were required, from three to six inches, the material being brass tubing of square and triangular section. The first impulse was to make a punch, but the difficulty of maintaining the proper length after hardening, as well as the inability of the open-joint tubing to stand up under the pressure of all the lines, soon convinced me that the plan was not feasible. I decided to cut some graduating rolls in the milling machine. These were carefully hardened and afterwards mounted on the spindle of a small miller. The screw was then removed from the table and a lever substituted. A pin on the roll, coming in contact with an adjustable screw on the table, compelled the roll and the work to come in contact at the same instant. I found that with a roll of at least four inches in diameter there was little or no need for the pinion and rack that I had designed to keep the parts moving in unison. There were never less than two teeth of the roll in contact with the work except at the beginning and end of the travel. I may add that the figures were held separately in a frame and were not put on at the time of graduating. My original plan was to have the figures cut on the roll, and to have the latter mounted on the draw bench so that the tubing could be graduated as it was made; as a final operation after being drawn down to size. Fortunately, or unfortunately, the first experimental rolls came out so well that it was not thought advisable to seek further and I thus failed to get an excellent opportunity to make a more extended study of the manufacture of cheap scales.

* * * * *

There is a great gap between the old English measurement that was based upon the distance between the tips of the fingers of the outstretched hands of King Henry and the refinements introduced by Profs. Rowland and Michelson. Prof. Rowland ruled surfaces with an amount of error so small as to be far and away beyond the comprehension of shop men of my caliber, and Prof. Michelson developed a method of determining the value of linear measures by the length of a wave of light. This was accomplished by an instrument which permits a determination of the number of waves of lights between any two points or lines in a standard bar.

* * * * *

There is no necessity to multiply the parts of a machine if a smaller number will serve the purpose, but this scale topic brings to mind an idea that it is worth mention. Suppose two scales, A and B, are graduated from the one standard. The errors have been purposely magnified in the irregular spacing. If the two scales are arranged parallel as in Fig. 1, and lines drawn from the graduations across a space CD, the divisions a, b, c, d, will be more nearly alike than the

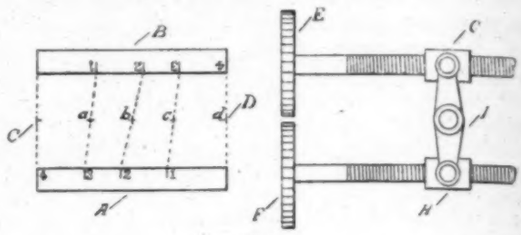

FIG. 1.

spaces on either of the scales. We shall have struck an average between the outer limits of the scales. The same principle would apply if A and B happened to be two gears, or two screws. Take the sketch on the right of Fig. 1: The two equal gears, E and F, are attached to two screws passing through the nuts G and H, and the nuts are connected by the casting I. Assuming that the gears and screws have been arranged on the same lines as the scales A and B, by placing them so that one in each pair is reversed to their original position when they were cut; and having the part I operate a lathe carriage, then another screw cut under these conditions would seem to have a more uniform thread than either of those from which it is cut.

* * * * *

The increased cost would probably be prohibitive as compared with the slight gain otherwise. There is one feature to which attention may be directed and that is the method of driving the lathe carriage. The proposed connection would bring the point of application immediately below the tool post —a matter in which the common lathe works under a disadvantage.

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In Fig. 2, the same scheme is applied to a gear cutter. A

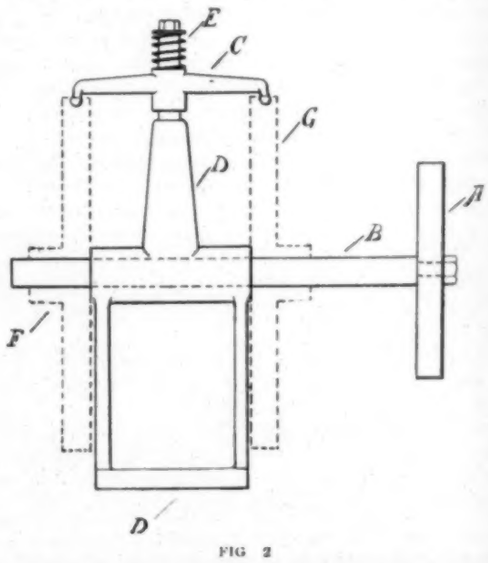


FIG 2

is the blank to be cut and B is the shaft on which it is held

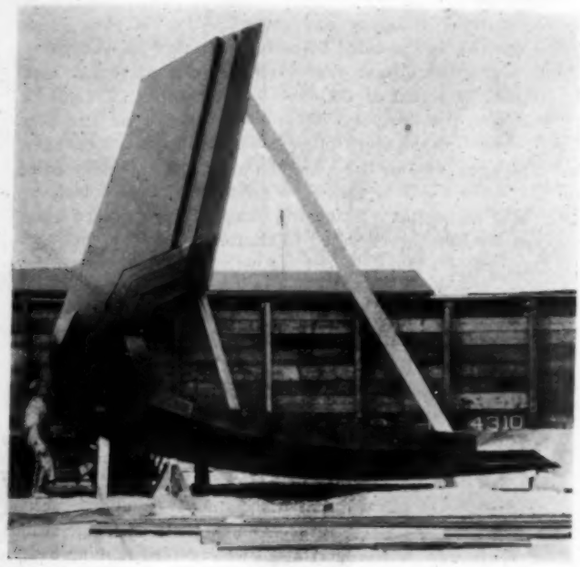
during the operation. C is the locking device, fitting easily on the turned projection on the bearing D. There is a spring E to press down the locking device and there are two master gears, F and G, (shown in dotted lines) fastened to the shaft B. The ends of C terminate in balls to drop into the tooth spaces in the gears F and G. Averaging errors in this way makes too complicated a machine for general use and if a greater accuracy is required, then it would seem preferable to improve a single gear to the limit desired and thus cut down the number of parts.

* * * * *

To get back to the steel scale, however, it is to be conceded that that tool comes nearer to being universally interchangeable than anything else about the shop. And when it is considered that the standard from which it is derived is thirty-six inches long and that the sub-divisions have to be repeated so many times it is a matter for surprise that the results are so nearly alike, and that the successive imitators have kept so closely to copy. Altogether, the steel scale fails to get the honor due to its undoubted merit and it will continue to be thrown around as carelessly as ever.

LARGE PATTERN FOR STEEL CASTING.

A pattern of unusual size was made recently for a battleship casting. The Fore River Ship & Engine Co. of Quincy, Mass., has the contract for the 15,000-ton battleship New Jer-



LARGE PATTERN FOR STELE CASTING.

sey and Rhode Island, and the pattern shown is for the steel casting for the lower part of stems of these vessels. The casting will weigh about 72,000 pounds and will measure 26 feet across corners. Approximately 3,000 feet of lumber entered into the construction of the pattern.

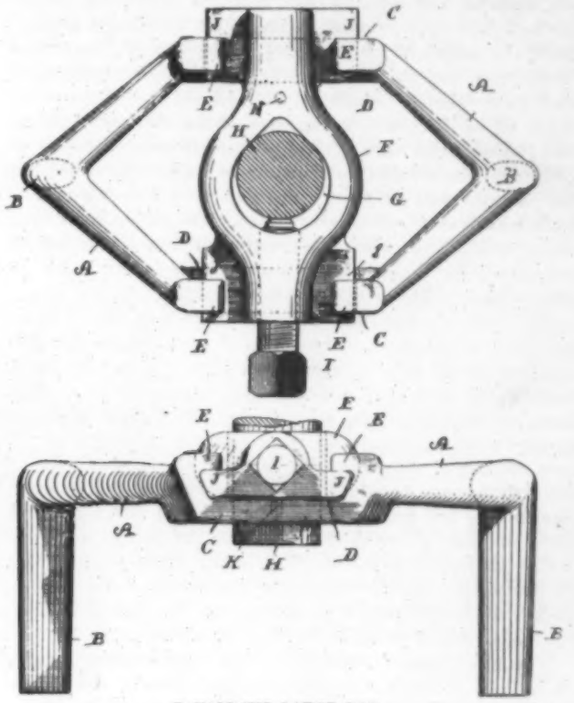
The new furnace of the Warwick Iron Co., at Pottstown, Pa., will be placed in operation about Oct. 1.

A. A. Griffing & Co., Jersey City, N. J., have commenced suit against the insurance companies carrying their risk to recover the insurance which they allege is due them owing to the recent destruction of their entire plant by fire. The loss is estimated at $100,000.

The new mixer recently installed at the New Castle plant of the National Steel Co. at New Castle, Pa., was placed in successful operation last week. The molten metal is provided by the Rosena and Raney furnaces and the continued operation of these furnaces, now since the strike has been declared off, insures the operation of the mixer. With only one furnace working it was found that the metal cooled too quickly, as the body of the metal in the mixer was not deep enough to retain its heat.

AN EQUALIZING LATHE DOG.

A self-adjusting lathe dog of a simple and inexpensive type has been patented by Karl G. Holst of Waterbury, Conn. In the front elevation and the side view which we give below, A represents the sliding part of the dog, having two driving arms B, rigidly connected with the lugs E and the web C. This slide is mounted on ways J attached to the fixed part F, which is shaped like the main part of an ordinary lathe dog, the stock H being secured in the opening G by means of the set-screw I. The fixed member F is provided on the rear side with a pin K, which prevents the two pieces coming apart when the dog is not in use. The dog is fastened in the usual manner to one end of the piece to be turned, so that when the work is placed on the lathe centers the driving arms B will enter the slots in the face plate: the arrangement will afford a sidewise movement of the member A on the fixed piece F, while the distances of each of the driving arms B from the center line F remain equal; both arms coming in contact with the sides of the slots in the face plate when the lathe is started up. The force necessary to drive the work then becomes equally divided on each of the arms B, and as their position is symmetrical with respect to the center line of the



EQUALIZING LATHE DOG.

lathe the driving forces applied to them will have no deflecting influence on the headstock center or the work to be turned, which is the case when only one driving arm is used.

Crane Co., New York, a branch of Crane Co. Chicago, manufacturers of valves, fittings, pipe, etc., has added to its quarters a plant for the cutting, threading and flanging of pipe and for pipe bending. It is located at 497 to 505 Cherry St., connecting in the rear with the pipe storage warehouse at 742 and 744 Water St., and being opposite the main warehouse at 490 and 502 Cherry St. The building is 125 feet by 100 feet, the main shop being 110 feet by 63 feet, and devoted to large pipe, and the rear shop to the handling of small pipe and to pipe bending. The pipe is brought from the yard to the machine on trolleys with air lifts and when ready is loaded into the trucks in the same way. There are 13 pipe machines in the main shop and machines for threading flanges of all sizes and facing lathes for refacing flanges after they are screwed on.

Influential business men of Port Huron, Mich., have made the Mackey Engine Co. of Pontiac, Mich., flattering offers to have the latter plant removed to their city.

THE OUTCOME OF THE STEEL STRIKE.

Strikers' View of the Causes of Their Failure.

The *Amalgamated Journal*, the organ of the Amalgamated Association, whose editor is a member of the executive committee which conducted the steel strike, has the following editorial, which seeks to summarize the causes of the association's defeat:

"The settlement made with the representatives of the American Tin Plate, the American Sheet Steel and American Steel Hoop Companies terminates the general strike and the result is a bitter disappointment to the officers and members of our organization as well as the friends of the cause of organized labor all over the world.

"The cause that led up to this unsatisfactory settlement were the overwhelming odds that the association had to battle against, the daily press, public opinion, the advice of prominent labor leaders and the withdrawal of credit by merchants. The injunction issued by the Federal courts, the degeneracy of the ex-members who happen to hold managing positions in the tin plate mills becoming strike-breakers and teachers of strike-breakers, going among their former associates in unionism, tempting and seducing them from the standard of unionism by bribery and promises of prominent and steady employment; the unlimited use of money by the United States Steel Corporation, and its evident willingness to spend millions to teach green labor to become experienced and skilled, its power to use all of the aforesaid agencies, shows that the Amalgamated Association was left entirely to its own resources to battle with the greatest combination of capital the world has ever known, while the trust with its immense money power to begin with was aided by every agency the public could furnish it with. Thus it became evident that it was suicidal for the association to keep up a contest that would result in greater losses each week that was prolonged.

"The trust insisted that whatever mills they would begin to operate would have to be excluded from the list of mills that they would treat with the association for and the experience of the past week and their evident preparation to open some of the western tin mills during the coming week accounts for the acceptance of the conditions submitted by the trust officials at this date. We engaged in the strike for an unselfish purpose, namely, to gain union recognition for workingmen who had for many years been denied that right, and, while we have failed in accomplishing the end in view and having suffered irretrievable loses in our righteous endeavor, the association must be given the credit that it did what it could and failed because moral support was withheld from it by those whom it had counted as its friends

"The Amalgamated Association must be reconstructed along many lines to effectively meet the opposition of the United States Steel Corporation. The methods pursued in former years have proven entirely inadequate to meet the conditions that confront us today. The experience gained, while a very dear one to the organization, brings with it lessons that should never be forgotten.

"Never before did the association receive such magnificent support from the kindred trades, but it did not extend far enough to be effective. If the Duquesne, Braddock and Homestead workmen had only imitated the splendid example of the McKeesport men, there would be a different settlement attained. If the men at Monessen had come out instead of aiding the trust, the association would be in a different position than it holds today. If the men at Vandergrift, Leechburg, Scottdale and Saltsburg had joined in the effort to get recognition instead of helping the trust to break our strike, which was really started in a view of freeing them from non-union conditions the strike would have been won by the association. If the men at South Chicago had been loyal and responded to the call of the president; if Bay View had been firm to the end; if Joliet had not trembled in the balance, other places that showed instability would not have been affected; if men who owe all they are in the world today to the Amalgamated Association had not shown the cloven hoof, persuading not only their own people, but went around the country advising others to go back to work; if the rollers in Painter's mill had done the noble act instead of playing the craven; if all our men had only been as true to the interest of our organization as the members of the trust were to the interests of that corporation, then victory would perch on labor's banner, but such was not the case. There was not enough unanimity. 'A house divided against itself must fall.' Until there is an equal trust and unity existing among workingmen on the question of unionism that exists among capitalists on the question of commercialism as we see it exemplified today in the formation of great monopolies, there is no reason to believe that the strike weapon can be used successfully to bring redress to wrongs imposed upon working people."

President Shaffer's Statement.

A circular has been prepared by President Shaffer and will be mailed to all lodges of the Amalgamated Association at once. We make the following extracts, embodying the portions which give the terms of the strike settlement:

"When we had almost completed arrangements with the representatives of the American Tin Plate Co. for scale rates and conditions, at the conference held in Cleveland, the question of signing for Monessen was broached, and after discussion it was agreed by both sides that the matter was to be settled by the sheet steel conference; if the Sheet Steel Co. signed for all, the American Tin Plate Co would do likewise. Thus, you perceive, the scale question was not settled completely with the last named company and could not be until the other company had settled. The tin plate people knew that we had decided to enforce article XIX, section 35, consequently the charge that we broke our agreement must rest upon the action of the sheet conference.

"We were in fairly good condition to win without help, but looked for aid from other labor bodies, some of which were pledged, and to the general public, but especially relied on the American Federation of Labor, with which body we have been affiliated ever since its inception, and toward whose support we have never failed to contribute.

"Our strike advanced, and we were confident of winning until the newspapers maliciously published statements which were replete with lies. Our people began to doubt and upbraid; some who had been officials deserted us and afterwards, like J. D. Hickey of Milwaukee, accepted the terms of the trust and scabbed. Hundreds who dared not sleep at home went to other places, and nearly every mill the trust tried to run was manned by A. A. men from striking mills. We knew our cause would be lost, but proceeded, feeling sure we would win if support could be secured for the faithful strikers. The American Federation of Labor gave us not one cent. The report that final help came from the national lodge of the Mine Workers is absolutely false—we received nothing.

"Perceiving that lack of money, loss of public approval, desertion by hundreds of our people and neglect by other organizations would render it impossible to gain a decisive victory, we endeavored to save what we could. I arranged for Mr. Gompers of the A. F. of L. to meet Mr. Morgan to effect a settlement. Mr. Morgan gave up his vacation, went to New York and waited for Mr. Gompers, who failed to appear, nor has he since explained why he neglected our interests. We were called upon at the national office by John Mitchell of the United Mine Workers, Mr. Easley of the Civic Federation, Mr. Henry White of the garment workers and Prof. Jenks of Cornell University. These gentlemen inquired carefully into our strike and Mr. Mitchell stated that if we would present a proposition, which he outlined, he would demand acceptance by the trust, or call out the miners, and he said he felt sure Mr. Sargent would call out the trainmen to strike also. We sent the proposition to the members of the executive board, which voted in favor of the proposition, of which the following is a copy:

"'We, the representatives of the Amalgamated Association, hereby agree that the scale shall be signed for the mills which were signed for last year, with the understanding that union prices shall be paid in the mills now on strike, and that no striker shall lose his position because of connection with labor organizations, nor shall he be prevented from continuing his membership if he desire.'

"I notified Mr. Mitchell and Mr. Easley of the acceptance

of the proposition and on Sept. 4 obtained the following telegram:

"'New York, Sept. 4, 1901.

"'Theodore F. Shaffer, Pittsburg, Pa.: We have had an extended conference with Messrs. Schwab, Cory, Preston, Graham and McMurtrey of the United States Steel Corporation and presented your proposition for the settlement of the present strike. It was rejected. We can, however, secure settlement on the following basis:

"The signing away of the agreement for all mills which were union last year except Old Meadow, Saltsburg, Hyde Park, Crescent, Irondale, Chester, Cambridge, Star and Monessen. There will be no discrimination against any one by the company for his connection with the strike and no questions asked of any member about his connection with the strike. We are convinced that this is the last offer of an agreement which the company will entertain and that we must be in a position to accept these conditions today or all negotiations will be off. From the facts demonstrated to us of the present situation of the strike, that is, the mills already in operation and several others which will be in operation within a day or two, we are strongly of the opinion that the interest of your trade and your organization demands that these terms be accepted. We unqualifiedly recommend their approval by you at once.

"JOHN MITCHELL,
"SAMUEL GOMPERS,
"FRANK SARGENT,
"J. W. JENKS,
"HENRY WHITE,
"RALPH M. EASLEY".

"Mr. Gompers (by phone) said to your president: 'Mr. Shaffer, I, as an individual, recommend that you take a stand for the proposition. I have done the same and would do so again.' We refused to hold further telephonic intercourse with him and waited for the coal miners and railroad men to be called out. They were willing to come, as thousands assured us, but they have not been called, and the trust was more sure that with other organized labor bodies against us we must be defeated. Our people became disheartened; they sent letters and telegrams, asking the board to settle. That body gave full power to the national officers and the latter requested your president to seek a conference. He was successful after many difficulties. The conference was held in New York Sept. 14, and the subjoined settlement made. We give the actual substance:

AMERICAN TIN PLATE CO.

"1. Scale shall be the prices agreed upon at Cleveland and found in scale book.

"2. This contract is between he A. A. and the A. T. P. Co., the latter being a distinct and separate company in itself.

"3. The company reserves the right to discharge any employe who shall, by interference, abuse or constraint, prevent another from peaceably following his vocation without reference to connection with labor organizations.

"4. The union mills shall be represented as such—no attempts made to organize; no charters granted; old charters retained by men if they desire.

"5. Individual agreements shall be made for mills of improved character, until they are developed, when scales shall be made to govern.

"6. Scale is signed for mills below: Ellwood, Ind.; Ellwood City, Laughlin, Middletown, Ind.; Falcon, Gas City, Anderson, Ind.; Joliet, New Kensington (two mills), Atlanta, Ind.; Connellsville, New Castle (two mills), Lisbon, Johnstown, Muskegon, Cannonsburg, Labelle, Canal Dover.

"7. Agreed that the company shall not hold prejudice against employes by reason of their membership with the Amalgamated Association.

"8. This agreement is to remain in force three years from July 1, 1901, but terminable at ninety days' notice from either party on or after Oct. 1, 1902.

["Brethren: This last clause is to be voted on by the tin lodges and answer to be given immediatelv. If you agree to a three years' scale with ninety days' notification, vote yes. If you prefer the yearly scale, vote no. Do this at once or the above will become a law by default. Note—This agreement is only for the scale year ending June 30, 1902.]

AMERICAN SHEET STEEL CO.

"Scale as printed is signed for all mills of last year but Hyde Park and Canal Dover.

AMERICAN STEEL HOOP CO.

"Scale as printed is signed for mills signed for last year."

In conclusion Mr. Shaffer says: "There are two questions before us: First—How is the Amalgamated Association affected by the settlement? We lose the scale from seven mills, but do not lose the men unless they so elect. The following proposal has been made to the men in the mills not signed for: 'If you can accept terms offered do so, and if you retain your charter we guarantee recognition as union men with the right of representation at the convention. If you refuse the terms and continue the strike we shall give you all the support we can, financially and otherwise.'

"As the National, Federal and Tube Steel Companies had been arranging local scales they were left to do so in this instance, and the above proposal applies to them.

"Second—What shall be our policy? Let us take care of the men who have fought well and yet are suffering. To this end I hereby levy an assessment of 10 per cent upon the members of the Amalgamated Association. Brethren, we ask you to help these men who have shown themselves true blue in times of trouble. We know there are some who will complain and hesitate, but you owe this debt to your brothers and the association. Your wages have been preserved. Pay this assessment cheerfully. The trust has had all the strike it cares for and desires no more, but if we are weak it will not hesitate to try again to destroy us. If we are strong, it will fear to try. In closing we desire to say, if you think your officers are inefficient and incapable; if there are others who can do better, let us know, and I am sure we shall help the organization by getting out of the way. I for one am ready to make way by resigning if the members think it will aid the cause."

The Gadsden Car, Foundry & Machine Co., Gadsden, Ala., with capital of $12,000 paid in, has elected W. B. Bellenger, president; R. B. Kyle, vice-president, and H. B. Murphy, general manager. Plant is now being built for manufacture of tram cars, wheelbarrows, moldings, castings, iron hollowware, etc. The firm is in the market for a 24x48-inch planer, cupola fans, a light wheel press of about twenty-five tons capacity, and band-saw and wheelbarrow machinery.

The Westmoreland Steel & Mfg. Co. of Pittsburg, whose plant is located at Greensburg, Pa., will shortly go out of business, the property being acquired by the Westmoreland Steel Co., a charter for which has been applied for. J. A. McConnell, E. Kaufman, W. C. Gill, W. Kaufman and H. E. McIntosh are the incorporators.

At the annual meeting of the stockholders of the Thomas Iron Co. of Hokendauqua, Pa., held last week, officers were elected as follows: Samuel Thomas, W. H. Hulick, W. P. Hardenberg, Frederick R. Drake, J. S. Rodenbough, J. S. Krause and B. F. Fackenthall, Jr. Mr. Fackenthall was re-elected president.

The striking core-makers employed at the foundries of W. & F. Smith, Hunt-Spillier Co., Broadway Iron Foundry Co., Howard Iron Foundry, Osgood & Hart, Whittier Machine Co. and S. K. Lovewell at Boston, Mass., returned to work last week. Their demand for a nine-hour day was conceded without a reduction in wages.

The second of the furnaces of the new plant under erection at Pueblo, Colo., by the Colorado Fuel & Iron Co., is well under way. One of the hot blast stoves is up and it is probable that the second furnace will be completed early in the spring. The first furnace was blown in a short time ago.

A large universal plate mill is soon to be constructed by the Cambria Steel Co., of Johnstown, Pa. The mill is expected to have a capacity for rolling up to 1½ inches thick and 108 inches wide.

ENGLISH TRADES UNIONISTS ON PICKETING AND COMPULSORY ARBITRATION.

The English newspapers give detailed accounts of the proceedings of the Trades Union Congress. The meeting is said to have had the largest attendance of delegates for several years; in all there were some 400 delegates sent to represent about a million and a quarter of organized working men and women. All the great trades were represented with the exception of the engineers (machinists) and the Northumberland and Durham miners. The engineers were suspended for two years owing to a dispute with another trade; and the time when they would be eligible to return to the congress had not expired when it was necessary to send in nominations for the meeting this year.

A considerable portion of the time was taken up with a discussion of the recent decision of the higher courts in connection with the Taff Vale Railroad picketing case. The parliamentary committee recommended congress to take a test case to the House of Lords to settle how far picketing may be carried on without infringing the law and rendering the funds of societies liable for damages; also that a fund should be established for carrying this out, and that each society should amend its rules to secure protection against some of the consequences of the judgment of the House of Lords in the Taff Vale case. Mr. Bell, M. P., secretary of the Amalgamated Railway Servants, said an action had been commenced against his society, and an argument had taken place before the Master of the Rolls as to whether the venue of the trial should be in London or Glamorganshire, the railway company wanting the former and the society the latter. He advocated an amendment of the trades union act, at any rate to make secure all the benevolent funds of the various societies. It is not likely, however, that the present conservative house will pass an act of that type and the trades unionist must submit to a law which fails to see a difference between law-breakers, whether employers or employed. The resolution was carried unanimously and later a recommendation was accepted to the effect that all the societies contribute pro rata to a legal expense fund.

Compulsory arbitration came up for consideration and a resolution was offered by Ben Tillet, as follows: "In view of the colossal growth of trusts and combines of speculative capitalists and the consequent concentration of capital and monopoly of industry, this congress foresees the grave danger to the nation and the toilers of dislocation of trade, stoppage of work, and distress of wage-earners. To avert such a calamity this congress calls upon the legislature to pass an act creating a supreme court of arbitration, the court to be presided over by a lord justice, and to be constituted by an equal number of workmen's and employers' representatives, who shall take evidence from the party aggrieved or their representatives, legal experts to be in all cases debarred from acting as representatives; the power of the court to be compulsory; conciliation courts for the various industrial centers to be formed to act in conjunction with the supreme court, and to be termed district courts; in all cases workmen's representatives to be selected by trades unions as commissioners or members of the supreme court for the effective dealing with disputes; commissions to be constituted for the great staple trades, viz., mining, textile, transport, engineering, and agriculture, with a crown judge over each; failing the courts settling disputes, cases to be submitted to the supreme court; only unions registered under the Trades Union Act, and firms covered by registration under an act identical with the Trades Union Act, to be eligible for the consideration of courts or the supreme court of arbitration: We therefore instruct the parliamentary committee to draft a bill for the purposes aforesaid." It was pointed out by a member of parliament, who was also a delegate to the congress, that if the principle was adopted there would be in most cases no necessity to go to the extremity of compulsion. Both parties, knowing that there was a law, would come together and settle their disputes. On a vote being taken, the resolution was defeated by 676,000 to 366,000.

Resolutions were passed in favor of a national system of state-paid education and pensions for the aged. The latter resolution was as follows: "That, in the opinion of this congress, no scheme dealing with old age pensions will be satisfactory to the whole of the workers in this country which seeks to subsidise existing pension societies, or which connects pensions with any institution that will mark them with the stigma of pauperism. The only legislation that will solve the problem presented by age and poverty in modern industrial life is that which recognizes the pension as a civil right which may be claimed by any citizen on reaching a given age; and we further call upon the government to carry out the pledges given by its supporters at the general election of 1896, which up to the present time have been ignored, and we instruct the parliamentary committee to convene a national conference of representatives of trade unions, co-operative, friendly, and other societies to formulate a scheme which, in its opinion, would be practicable and approved by the people, and that the costs of such conference be defrayed by voluntary contributions and delegates' fees."

INDUSTRIAL CONSOLIDATIONS IN THE UNITED STATES.

Unintelligent competition has been cited as one of the most striking reasons for the modern consolidation movement of industries. The fear of this has driven the large manufacturers to the necessity of pooling their interests. Unintelligent competition is described as the most ruinous of systems, caused by manufacturers who sought to cut under all rivals without counting the cost. If one manufacturer could produce an article for, say, a dollar, a rival might reason that he could do it for ninety-nine cents, while a third might attempt to do the same work and sell the product for ninety-eight cents. In the rate-cutting competition there would be little time to make thorough investigations as to the actual cost of the articles, and in time failures would follow. The consumer, it might be, would find some temporary benefit from this system; but the manufacturers would lose, business would be demoralized, and eventually the consumer would have to pay higher prices for the articles until the machinery of manufacture was once more reorganized and running smoothly.

It has been this view of business that has influenced the consolidation of industrial interests in the United States which began in 1889, when the movement was considered phenomenal. In 1900 the high-water mark was supposed to have been reached; but with the example set by the United States Steel Corporation, the first six months of the present year have dwarfed all other records. There have been grouping of railroad combinations by the score, and reorganizations and consolidations of street railways innumerable.

Great and vast as its capital and interests may be, the United States Steel Corporation does not in any sense monopolize the whole business of mining iron ore, or in turning out special steel and iron products in the United States. Its position, however, is so paramount and commanding that it may have the power to fix the prices and conditions in most markets of the world. The corporation and its directors have repeatedly disavowed any intention of aiming to monopolise the business to the disadvantage of the consumer; but while it will strive to make money, it will be in a position to do this by better methods of manufacturing and by the regulation of supply and prices so that violent fluctuations will not cause alternate periods of great depression and unwise expansion. If it can succeed in this, it will prove not the unwise and threatening octopus that many have been induced to anticipate.—[George E. Walsh, in Cassier's Magazine.

The Iron City Engineering Co., of Pittsburg, is sending to the trade a neat and useful celluloid folding rule; it is divided into metric and inch measurements up to two feet and also bears sundry belting, wiring and other formula and tables, of undoubted usefulness, in very compact form.

G. A. Crosby & Co., Ltd., of Laonia, Ont., are erecting a new plant at Point Edwards, Ont., for the manufacture of patent automatic can-making machinery, presses, dies and tools for sheet metal goods. They will also manufacture a line of machine tools and light gray iron and brass castings. The plant will be in full operation about Oct. 1.

THE ST. LOUIS EXPOSITION.

St. Louis, Sept. 23.—The letting of contracts aggregating about $11,000,000 for construction work on the buildings and grounds of the Louisiana Purchase Exposition will begin about December 1. It is planned to apply about $7,000,000 of this amount on the buildings and about $4,000,000 on the grounds. The letting will begin with the contracts for four big exhibit buildings, which with their surroundings will, it is estimated, cost about $4,000,000. The main buildings will be larger than those of any previous exposition in Europe or America. Some will exceed similar buildings at former expositions by over 25 per cent.

The site has been selected to embrace the unfinished half of one of the largest of public parks, known as Forest Park. The part to be used contains 668 acres and 300 acres of surrounding property will be added to bring the entire area of the site up to about 1,000 acres. The ground plans of the exposition have been drawn up by a commission of architects in which every section of the country was represented. Isaac S. Taylor, of St. Louis, was its chairman. The commission of architects had the advantage of the advice of a board composed of a sculptor, Mr. F. W. Ruckstuhl, of New York, a

ISAAC S. TAYLOR.

landscape engineer, Mr. Julius Pitzmann, of St. Louis, and a landscape architect, George E. Kessler, of Kansas City, who laid out the boulevard and park system of Kansas City. The details of the general arrangement have been worked out by E. L. Masqeuray, of New York, as chief designer. The site has been surveyed and the lines of buildings and avenues staked off.

The designs for the separate buildings, assigned to the individual members of the commission of architects, will be submitted in scale drawings by the middle of October and the working drawings of the main buildings to be let first will be ready by Nov. 1. There will be no geographical restriction on bidders. The main stipulation will be that the buildings be ready for occupancy at a date sufficiently far ahead of April 30, 1903, the date fixed for the opening of the exposition., to allow exhibitors time to prepare their displays for the opening. To secure the completion of the buildings by this time, a sufficient bond will be required of the successful bidders. Materials will be employed in the construction work and conditions will be so adjusted that contractors may fulfill their contracts.

All this work will be in direct charge of Mr. Isaac S. Taylor, of St. Louis, who is at the same time chairman of the commission of architects, and director of construction and maintenance for the Louisiana Purchase Exposition. Over him will be only the unsalaried officials and directors of the Louisiana Purchase Exposition Company. It has been decided to do away entirely with the position of Director General, who, in most former important expositions, was at the head of the salaried forces and controlled practically all the departments, supervising the departments of works, of exhibits, of publicity and promotion, of accounts and concessions.

On advice of President Higginbotham of the World's Columbian Exposition at Chicago, and for good reasons, one being that it would tax too severely the energies of one man to attend to all departments, the work will be divided among four chiefs—director of construction and maintenance, whose duties will be those of the Director of Works in former expositions; director of exhibits, who will have supervision over exhibits in all departments; director of concessions and admissions, who is to supervise the granting of all concessions and to have charge of the collection of revenues from them and from admissions; and commissioner general, who is to have charge of the accounts of the company.

All these department chiefs are to report to the executive committee and the board of directors, either through another committee or directly. Mr. Taylor, director of construction and maintenance, reports to the committee on grounds and buildings, a committee of seven members, and through them to the executive committee and the Board of Directors.

The St. Louis World's Fair is the first at which the same man was Chairman of the Commission of Architects as well as Director of Construction and Maintenance. This is the first great exposition in which the same man who led the planning of the exposition had the chieftaincy in carrying out the construction. The arrangement is pronounced the ideal one by all who have had a part in the construction of former expositions. Mr. Taylor had a large voice in the selection of the commission of architects and presided at their meetings from the beginning.

The plan which will be pursued in the construction of a building at the St. Louis Exposition will be to let the entire building under a single contract, the contractor to have control of all the sub-contractors. "This plan is by far the most satisfactory," says Mr. Taylor. "Where the exposition company lets sub-contracts itself each sub-contractor must be watched and it is difficult to fix responsibility for faulty work. For this reason in former expositions the company had to pay extra for reconstruction of faulty work, and the cost of the extra swelled the total cost of construction immensely."

Isaac S. Taylor has been in St. Louis all his working life. He was born in 1851 in Nashville, Tenn. He graduated from the St. Louis University with class honors in 1868. After studying for six years under the preceptorship of Architect George I. Barnett, of St. Louis, he was taken into partnership, and the business was then conducted under the firm name of Barnett & Taylor. The Southern Hotel, the first fire-proof hotel in St. Louis, and still one of the finest hotels in the city, was erected by this firm. Since 1879 Mr. Taylor has been in business for himself in St. Louis. He has erected some of the largest buildings in St. Louis, beside much work in Illinois and Texas.

One other of the four heads of the St. Louis Exposition has been selected—Frederick J. V. Skiff, who becomes director in chief of exhibits. Mr. Taylor and Mr. Skiff have entered upon their duties.

The Baldwin Locomotive Works made a remarkable record in the first eight months of the year, the total number of locomotives built from Jan. 1 to Aug. 31 being 874. This is at the rate of 109.25 to the month, or 4.2 a day, counting 26 working days to the month.

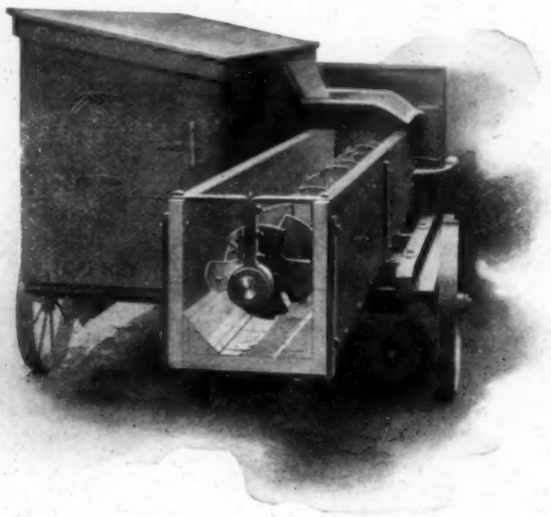
The Tuscarora Rolling Mill Co. of Newcomerstown, O., is reported in the local press to be erecting a sheet plant of four hot mills, two cold mills, two roughing mills and a bar mill. L. C. Taylor of Cambridge, O., and others are interested. It is expected the plant will be in operation in October.

The Etna Furnace at Ironton, O., which has been banked for repairs, has started again.

MORTAR AND CONCRETE MIXER.

A mortar and concrete mixer made by the Jeffrey Mfg. Co. of Columbus, O., is shown in the illustration.

As will be seen the mixing trough, which is substantially built of wood and iron, is supplied with a special spiral conveyer, made so as to cut, turn over and thoroughly mix the material, at the same time carrying it to the end of the box. This machine has been built for mixing mortar, sand, concrete, cement and similar material and has proved entirely successful. The power is furnished by gas or gasoline engine, the connection being made by means of pulleys and gears. The engine, mixer and driving connections are mounted on a platform provided with wheels and axle. The platform has a hinged leg at one end and a tongue at the other. The leg serves as a support, while the mixer is in use, and the tongue is used for moving it from place to place by attaching it to the rear end of a wagon. The mixer is sold without the platform and arranged to be driven by horsepower when desired. The machine mixes the mortar thoroughly and uniformly, enabling the masons to accomplish more work than where hand mixed mortar is used. It can readily be moved from place to place, discharging the material directly where it is to be used, and is thus well adapted to concrete work.



MORTAR AND CEMENT MIXER

A YEAR'S EXPORTS PASS $1,500,000.00.

WASHINGTON, D. C., Sept. 23.—Exports from the United States in the year ending Aug. 31, 1901, were $1,500,613,236. This is the first time in the history of our export trade that the figures for a twelve months' period have crossed the billion and a half line. The Bureau of Statistics, in its statement of imports and exports, issued each month, gives a total for the latest 12 months and compares it with the corresponding 12 months in preceding years, thus giving a convenient method of not only measuring the foreign commerce, but also measuring its growth. This table shows the imports and exports in each 12 months ending with Aug. 31, from 1896 to 1901, as follows:

Imports and exports from the United States during the 12 months ending Aug. 31 of the years named:

Yr. ending Aug. 31.	Imports.	Exports.
1896	$737,163,827	$906,403,525
1897	756,673,034	1,066,603,779
1898	623,192,020	1,236,643,922
1899	723,232,313	1,269,504,882
1900	848,675,810	1,399,000,520
1901	843,681,360	1,500,613,236

An examination of the above table shows that the exports have during the five-year period from Aug. 31, 1896, to Aug. 31, 1901, increased more than 50 per cent, while the imports have increased less than 15 per cent. While it is not customary to calculate the annual statistics of our commerce by other than fiscal or calendar years, the fact that the export record has, for the first time, exceeded a billion and a half dollars in a 12 months' period seems to justify these comparative figures for the period under consideration.

The growth in exports during the period since 1896, in which the increase in exports has been more than 50 per cent compared with an increase of less than 15 per cent in imports, has, as is well known, included all great classes of products and manufactures. Agricultural products now form 63.7 per cent of the total exports, and in 1896 they formed 63.9 per cent. Manufactures now form 29 per cent of the total exports, and in 1896 they formed 28.3 per cent. During the last year, however, the exports of manufactures have not kept pace with those of other industries. In the eight months ending with July, 1901, the latest month in which the details are accessible, exports of manufactures fell $32,000,000 below those of the corresponding months of last year, while exports of agricultural products were $57,000,000 greater than those of the corresponding months of last year. This reduction in exports of manufactures is about equally divided between copper and iron and steel, the reduction in copper exports being about $16,000,000 and in iron and steel about $16,000,000. The reduction in copper exports is chiefly due to the decreased demand for copper in other parts of the world for use in electrical and other industries. In exports of iron and steel the reduction is apparently due somewhat to the partial suspension of manufacturing activities in certain lines in the past

The Wrong Use of Trade Union Power.

The New York Tribune comments as follows on the outcome of the steel strike and on the trade union tendency to infringe upon the rights of employers and free workers:

It is a melancholy conclusion, which even those who more severely condemn the reckless and unreasonable course of Shaffer must regret. Yet it seems to be the almost inevitable fate of great labor organizations as they have been managed. Vain, ambitious or unscrupulous leaders use them in the day of their power and prestige to enforce extravagant and unjust demands; employers who have been willing to see them grow in influence are forced into opposition for self-preservation, and the end is a labor union wreck. Labor organizations ought to have a place of usefulness in industry. Wisely managed, with due respect to rights of free workers and the rights of employers to manage their own property, they may be of great service to workmen, and, in spite of their abuses, they undoubtedly have been. The prevailing willingness, however, of the men to let their organizations be used by leaders for selfish and even unlawful purposes has undoubtedly driven many persons who naturally sympathize with all efforts to improve the conditions of their fellows to regard the trades union as in itself an evil and a menace to order. It ought not to be, and would not be with conservative and wise management. A few conspicuous exceptions show that large labor organizations can be conservative forces, instead of being potential agents of industrial disruption whose growth is to be feared.

few weeks, partially to the reduced demand abroad, partially to the reduction in prices of the articles exported, and in large part to the fact that the exports to Hawaii and Porto Rico which were included in last year's statistics, are not included in the figures for the present year, the total exports of iron and steel of those two islands in the fiscal year 1900 having been about $7,000,000.

The phenomenal growth in exports is illustrated in another form by the fact that the monthly statements have not, for more than two years, fallen below the million dollar line, while, as already indicated, they have for the first time passed the billion and a half mark for a twelve months' period. The table which follows compares the monthly exports in each of the twelve months ending with August, 1896, and August, 1901, and illustrates the growth which has occurred during the intervening period:

EXPORT SFROM THE UNITED STATES DURING THE 12 MONTHS ENDING WITH AUGUST, 1895 AND AUGUST, 1901:

	1985	1900.
September	$58,540,063	$115,901,722
October	87,090,972	163,388,511
November	87,312,581	136,702,324
December	92,529,117	145,889,865
	1896.	1901.
January	86,970,028	136,325,601
February	77,701,904	112,957,014
March	75,574,184	124,473,643
April	71,091,747	120,754,190
May	66,568,263	124,567,911
June	66,705,871	102,774,263
July	67,717,789	109,451,775
August	68,601,006	107,426,417
Total 12 mo. ending Aug.	$906,403,525	$1,500,613,236

Dominion Iron and Steel Co.

The annual report of the above company has been made public. The plant is located at Sydney, Cape Breton In the report just issued President Whitney says: "The work of construction has been rapidly pushed the past year. Two of the furnaces are finished and are now producing iron of a very satisfactory quality. Investigations by drilling at Bell Island have revealed the fact that the quantity of ore actually there is more rather than less than the original estimate. There has been expended up to the present time, including the sum paid for the purchase and equipment of the Bell Island ore property, the sum of $9,571,054.41."

In his report to the president, General Manager Moxham says: "We have been considerably disappointed in the delay in completing the plant; nevertheless two of our blast furnaces are now in operation and the other two so near completion that their operation will not be long delayed. The 400 coke ovens have been completed. The blooming mill has most of the machinery in place and everything needed to complete it is on the ground. The open-hearth plant is being energetically pushed by the contractors, and at the present rate of progress will be completed during the early fall. The piers and unloading plants are practically completed. We have gone far enough in the development of our ore mines at Wabana and in the working of our coke ovens and also in the development of our limestone to speak with certainty as to these three items. There only remains the cost of labor, and with a thoroughly modern design of plant and the very satisfactory way in which the new machinery has so far dropped into line in its practical working, I think we can rest assured that there is no doubt as to our labor costs."

C. F. Mathes & Co. were awarded the contract for enlarging the buildings for the Lamb Wire Fence Co., Adrian, Mich., the Variety Iron Works of Cleveland has the contract for the structural steel work, the Ricard Boiler & Engine Co. of Toledo has the contract for the boilers, and the contract for building the stack was let to S. J. Pickett of Toledo. A wire mill will be constructed, but nothing definite has been done at present.

The American Iron & Steel Manufacturing Co., Lebanon, Pa., has increased the wages of its puddlers from $3.75 to $4 per ton.

PERSONAL.

John Clark, foreman of the converter department of the Lorain Steel Co., Lorain, O., resigned last week to accept a similar position with the Clergue interests at Sault Ste. Marie, Ont.

E. C. Crowther, for some time superintendent of the Hamilton Iron & Steel Co., Hamilton, Ont., has accepted the position of superintendent of Minerva Furnace, Milwaukee, Wis.

Guy R. Johnson has resigned as superintendent of the blast furnaces of the Carnegie Steel Co., at Duquesne, Pa. His successor is Max Shiras, who was connected with the Dominion Iron & Steel Co., Cape Breton, Nova Scotia, and more recently with the ore department of the Carnegie Steel Co.

Archibald W. Houston, who has been manager of the Ohio river district of the Republic Iron & Steel Co., with headquarters at Cincinnati, and who was recently elected vice president of that company, has removed to Chicago to undertake the duties of his new office. Mr. Houston will be at the head of the purchasing department.

A letter from Archer Brown, of Rogers, Brown & Co., written at Stockholm, states that he will be at home in a week or ten days. Mr. Brown with members of his family has been making a tour of Russia and Scandinavia.

A cablegram from T. J. Joyce, vice president of the Domhoff & Joyce Co., Cincinnati, tells of his arrival at Bremen.

A. E. Rosenthal, formerly general sales agent for the American Rolling Mill Co., Chicago, has accepted a position with the National Rolling Mill Co., Hartford City, Ind., as general sales agent, with headquarters in Chicago, at 36 La Salle St. Mr. Rosenthal will have entire charge of all the sales.

J. W. Waterman, formerly of the Lorain Steel Co. and recently chief engineer of the Dominion Iron & Steel Co., has resigned the latter position and accepted a similar one with the Clergue company at Sault Ste. Marie, Ont.

Frank C. Roberts, of Frank C. Roberts & Co.; well known blast furnace and steel works engineers, will sail for Europe on Oct. 5. Mr. Roberts goes abroad at the request of the Consett Iron Works. This company desires to enlarge its works and use American methods and machinery. Two other concerns are negotiating for similar service.

William Barret Ridgely, until recently secretary of the Republic Iron & Steel Co., has been appointed controller of the currency by President Roosevelt, to succeed Charles G. Dawes.

John and Ellen Fritz, of South Bethlehem, Pa., celebrated the 50th anniversary of their marriage on Wednesday, Sept. 11. Owing to the illness of Mrs Fritz the day was passed very quietly. They received congratulations from friends in all parts of the country.

The Sedgwick-Fisher Co., 53 South Clinton St., Chicago, manufacturer of the Fisher air compressor, has sold a compressor, 7x36, to the West Side Foundry, Troy, N. Y., and another, 7x12, to the Southern Boiler Works, Mobile, Ala.

The union molders employed in the foundries at Buffalo, N. Y., have asked for an advance of 10 per cent in their wages on Oct. 1. At the present time they are receiving a minimum of $2.50 per day and they ask $2.75 per day. The agreement entered into a year ago expires on Oct. 1. Henry W. Wendt of the Buffalo Forge Co., president of the Buffalo Foundrymen's Association, states that no action whatever has yet been taken, but it is believed that the demand of the men will be opposed.

The Sharon Ore Co., at Buhl, Minn., owned by the Sharon Steel Co., is now shipping 800 tons of ore daily and in the near future the daily output will be increased to 1,500 tons. The output of the mines the current season is expected to reach 75,000 tons. The ore is used in the blast furnace of the Sharon Steel Co., Sharon, Pa.

At the regular monthly meeting of the Engineers' Society of Western Pennsylvania, held at Pittsburg Tuesday evening, September 17, F. B. Whinery read a paper entitled "Blue Printing by Electricity." William E. Conroy, Henry L. Irwin and R. E. Waggoner were admitted to membership.

STATUS OF THE MILLS AFTER THE STRIKE.

PITTSBURG, Sept. 24.—With the exception of a few mills all of the plants of the constituent companies of the United States Steel Corporation which were idle on account of the strike have resumed operation in full. The National Steel Co. this week placed in operation its Bellaire, O., plant, nearly all of the strikers having returned to work. The New Castle, Pa., and Mingo Junction, O., plants were started last week.

The National Tube Co. this week resumed operations at its Riverside plant, Wheeling, W. Va., and all its departments, with the exception of the Boston Iron & Steel Works, are in operation.

The American Sheet Steel Co. this week placed the Wood plant at McKeesport, Pa., in partial operation, and it is probable that the plant will be on in full before the end of the week. All of the other mills of the company are operating. The strikers refuse to return to work in the mills of the American Tin Plate Co. made non-union on account of the strike, but despite this refusal the mills are running and new men are being secured to take the places of the former employes. The tin house workers at nearly all the tin mills will return to work next week, thus insuring the resumption of deliveries of tin plate within the next ten days.

The discontented tin plate workers who are in open mills as a result of the strike agreement now threaten to break away from the Amalgamated Association and form an organization of their own. There is much disaffection in the ranks and the indications are very favorable for another labor organization which will include only the tin plate workers of the country.

From Joliet, Ill., it is reported that rod mill No. 1 has resumed operations in full and the merchant mill is to resume at an early date. The strikers at Joliet and Bay View voted to return to work and apply for their positions as individuals.

In the settlement as given in President Shaffer's statement in another column it will be noticed that the American Tin Plate Co., as we stated last week, secured the greatest number of concessions. The fact that the company retains the right to discharge any employe for interference with others in the mill, without regard to affiliation with the Amalgamated Association, is one of the most decided checks yet given to the Amalgamated Association. It means that men in the mill who refuse to join the association will henceforth work in peace, and the mill committee, once ruling supreme and having sole authority over the discharge of association members in the mill, in the future will not be consulted about the discharge of any employe. In addition the mills now non-union are to remain as such and at no future conference are they to be considered in the light of union mills, whether or not the men employed therein are affiliated with Amalgamated Association. Another concession that in a great measure will tend to prevent future difficulties is embodied in the fifth clause of the agreement. Heretofore the association has paid little heed to improved mills and scales were made to cover them as well as the old-style machinery where the tonnage was comparatively limited. According to this clause individual agreements are to be made with the men pending the formulation of a new and local scale covering this improved mill.

In the list of mills signed for, the Lisbon plant at Lisbon, O., is included. In our recapitulation last week, the Lisbon mill was included in the non-union class by mistake.

It is optional with the tin plate workers whether the scale shall run for three years with a 90-day notice clause included or whether the scale shall be settled annually. This matter is to be voted upon by the lodges and as soon as the vote is made known the scale shall be in force accordingly. Should the workers decide upon an annual settlement the scale will remain in force until July 1, 1902.

In Mr. Shaffer's statement he berates the newspapers for lack of support and then charges labor unions in general with the same. It is apparent from Mr. Shaffer's own words that the refusal of this support was due to the impression prevailing throughout the country that the strike was ill advised. The results, more than anything else, have proved conclusively that Mr. Shaffer's idea of breaking the stock market and thus winning his point was impracticable and that the public at large as well as the labor unions, were not in sympathy with the tactics employed.

LAKE SUPERIOR IRON MINES.

The Cleveland Cliffs Iron Co. is making an ore stock pile at Presque Isle near the ore docks of the L. S. & I. Railway. Stockpile room at the mines is limited and more cannot be provided for some time. Meanwhile the company wants to keep its mines busy and its working organization intact.

After an unfavorable outlook for months the Bristol mine on the Menominee range has a good prospect. The removal of tools and equipment from the bottom had been ordered when ore was found just two feet farther in the rock than the point at which operations were about to be abandoned. A body of good ore has been shown already, the only question being as to its extent.

The Crystal Falls mine is expected to make a new record of production this year. About 20,000 tons remain in stockpile and a second steam shovel has been put at work to hasten shipments.

Additional equipment is being installed at the Dober mine—two Wickes boilers and duplex Rand compressors.

At the Chapin mine about 1,000 men are now employed. The improvements now under way point to many years of operation of the property, with the expectation of close to 1,000,000 tons' output annually. Two Prescott pumps, triple expansion condensing, are now being installed at B shaft, and a new Worthington pump at No. 2 Hamilton shaft. The re-erection of the Allis pump, formerly stationed at D Chapin shaft, is also planned and a steel pumping station is to be built on the 16th level of No. 2 Hamilton shaft. The sinking of a new modern shaft is the most important work under contemplation. It is in this shaft, which will be a vertical one, that the Cornish pump so long in service at D shaft will be re-erected.

The Penokee iron range in Wisconsin, which stretches from Hurley past Mellen and Mineral Lake and beyond White River in Ashland county, once attracted attention, but for years has been neglected as unpromising in comparison with the Gogebic range. It is now stated that a recent discovery by a miner named Guest, living at Hurley, has awakened new interest in the Penokee district. The find of Guest was the result of a summer's work, and the ore indications are said to be promising. A company has been formed composed largely of Mellen, Wis., citizens, to develop the property. It is known as the Guest Mining Co.

Increasing Oxygen Content of Air for Furnaces.

In a recent issue of *Le Genie Civil* is published a short note describing a machine for increasing the oxygen content of air before using it in furnaces.The machine is said to be due to M. Mazza, an Italian engineer, and is merely a centrifugal separator. On passing air into this centrifugal machine the oxygen molecules, being heavier than the nitrogen ones, tend, it is stated, to concentrate at the periphery of the machine, and on drawing off the air at this surface it is found to be considerably richer in oxygen than normal air. In fact, the oxygen content can, it is said, be readily brought up to 26 per cent of the total. Common air, it will be remembered, contains but 23.2 parts by weight of oxygen. The centrifugal machine used acts at the same time as a blowing fan, the enriched air being delivered under a slight pressure, while the impoverished air is drawn off continuously from near the center of the machine. About 2-h. p are needed, it is stated, to operate a separator capable of delivering 18,000 cubic feet of enriched air per hour. This enriched air has been used for supplying the furnaces of a boiler, and has led, it is stated, to an increase of water evaporated per pound of coal from 9.5 pounds, with natural draft, to over 12 pounds with the Mazza apparatus.

A second 110-ton Barnhart excavator and two standard gauge locomotives were added to the equipment of the Stevenson mine on the Mesabi range this month. The season shipments from this mine are near the 250,000-ton mark. With the additional equipment shipments will be materially increased from now on to the end of the season.

The Olive Furnace, Lawrence County, O., was blown in last week.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of their Wants:—

The Hilton Brass Works of Brooklyn, N. Y., has been incorporated with $20,000 capital. John Hilton, J. A. Hilton, I. S. Hilton, H. C. Brooks and Jacob Rung are the incorporators.

The capital stock of the Sharon Steel Co., Sharon, Pa., was increased $500,000 last week at a meeting of the stockholders. The amount derived from the increased stock will be spent in carrying out further improvements and additions decided upon several weeks ago.

The American Iron & Metal Co. of Chicago, Ill., has been incorporated with a capital stock of $12,000. The company will deal in old material. E. J. Rosenthal is president of the company.

A consolidation of the iron interests operating near Clarksville, Tenn., has been brought about. It embraces the property of the Red River Iron Co. and the Clarksville Furnace Co. The new company is capitalized at $200,000. Graham McFarlane R. B. Hickman and H. L. Williams are the incorporators. Mr. McFarlane has been elected president; H. R. Williams, vice-president; R. B. Hickman, secretary, and M. A. Senter, treasurer. It has been decided to expend $50,000 in improvements.

The citizens of Marietta, O., have received a proposition for the location of a four-mill sheet plant in their town, provided they raise a bonus of $50,000 and give the promoters 12 acres of land for a mill site. The proposition has not been accepted as yet.

The St. Louis Steel Range Co. of St. Louis, Mo., has been incorporated with $2,000 capital. L. H. Winter, F. T. Neal, W. C. Moore and C. S. Reber are the incorporators.

The Richmond Iron & Brass Bedstead Co. of Richmond, Ind., has been incorporated with $1,000 capital. H. S. Byrkit, E. E. Perry and W. A. Miles are the incorporators.

The Milwaukee Machine Co. of Milwaukee, Wis., has been incorporated with $50,000 capital. C. E. Search, Edward Cheshire and Fred M. Weis are the incorporators.

Citizens of Orange, Texas, are organizing a stock company with a capital of $50,000 for the purpose of erecting a foundry and machine shop.

The Wais-Kind Tool Co. of Cincinnati, O., has been incorporated with $50,000 capital. C. Wais, R. King, Jr., G. P. Hunt, A. Bettman and W. J. Davidson are the incorporators.

The Automatic Weighing Machine Co., of New York, has been incorporated by Mortimer W. Byers, Mark M. Solomon and Joseph A. Walsh of Brooklyn. Capital, $3,600,000.

The charter of the Llano Milling & Smelting Co. has been filed at Austin, Tex. The company has a capital stock of $1,000,000 and the incorporators are R. A. Greer and others of Beaumont. It is proposed to develop the iron deposits of the Llano district.

The Baltimore Ball-Bearing Co., Baltimore, Md., is in the market for drop-forging machinery, case-hardening ovens, grinding machines and ball-making machinery.

The Park Mfg. Co., of Charlotte, N. C., will buy a second-hand hoisting engine, without boiler, seven to ten h. p.; single cylinder and single drum, vertical or horizontal.

Fires and Accidents:—

The plant of the American Can Co. at Toledo, O., was totally destroyed by fire last week, entailing a loss of $225,000. The plant will be rebuilt.

Pettinos Bros.' foundry facing plant near West Bethlehem, Pa., was destroyed by fire last week, entailing a loss of $12,000. The owners have decided to rebuild immediately.

The plant of the Columbus Malleable & Gray Iron Casting Co., Columbus, O., was totally destroyed by fire last week, entailing a loss of $28,000. It is probable that the plant will be rebuilt.

The plant of the Edwardsville Brass Co., Edwardsville, Mo., was totally destroyed by fire last week. Loss, $1,500.

The No. 3 shaft house and the machine shop of the Franklin Mining Co. at Hancock, Mich., were entirely destroyed by fire and the blacksmith shop partly destroyed on Sept. 14. Loss, $10,000.

A fire last week in the foundry of the Gerst Bros. Mfg. Co. on Cass avenue, St. Louis, damaged the building about $3,500 and the contents about $1,000.

Fire last week damaged the foundry of the N. O. Nelson Mfg. Co., at Edwardsville, N. Y., to the amount of $2,000 or $3,000.

The foundry of F. N. Peter & Bro., Newside, Pa., was recently damaged by fire to the extent of $5,000; insured.

New Construction:—

The Spring Steel Fence & Wire Co. of Anderson, Ind., has acquired a site of 5½ acres upon which a modern plant will be immediately erected. The main building will be one story high, 210 feet long and 70 feet wide. The machine shop will be two stories high, 100 feet long and 40 feet wide. The plant will contain 14 fence making machines when completed.

Wickwire Bros. will erect a wire nail plant at Cortland, N. Y., which will have a daily capacity of 1,000 kegs. The new building will be 90x300 feet.

The new addition to the Krein Chain Works of the Standard Chain Co., St. Marys, O., is nearly completed.

At a recent meeting of the board of directors of the Coatesville Boiler Works, Coatesville, Pa., it was decided to greatly increase the output of the plant, and to this end an entirely new plant will be erected to replace the present one. The construction shop will be 110x200 feet; in addition there will be an engine and boiler house. The construction shop will be equipped with traveling cranes and all modern appliances required in an up-to-date boiler shop. The company is capitalized at $50,000, and the volume of business transacted last year amounted to nearly $600,000.

The Cambria Steel Co. is building a new brick warehouse at Johnstown, Pa.

The Ash-Harper Gasoline Engine Co., formerly of Lansing, Mich., is having plans prepared for a new plant to be built at Lyons, Mich.

Ground has been broken at New Castle, Pa., for the erection of the new mills of the Hartman Mfg Co. The building purchased from the Shelby Steel Tube Co. has been completely remodeled and the work of installing 250 nail machines has already commenced. The plans provide for a wire mill 200x100 feet; galvanizing plant, 160x50 feet; cleaning department, 144x100 feet. The rod mill will be 225x200 feet and promises to be one of the most complete mills of its kind in the country. It is also probable that a steel making plant will also be erected in the near future. It has not yet been decided whether the plant will be Bessemer or open-hearth, but probably the latter.

The Woolley Foundry & Machine Works, Anderson, Ind., manufacturer of the Burger gas engine, has under consideration the enlargement of the plant.

The Acme Foundry Co. of Cleveland has purchased a new site 450 feet by 220 feet at Sawtelle Ave. and Sweeney St., and will build a new foundry in the near future.

The Reeves Pulley Co., Columbus, Ind., is building a brick addition, 112x56 feet, with traveling crane, etc., to its variable speed transmission department, and it will be ready for use Nov. 1.

It is reported that George W. Dixon will build a charcoal iron furnace at Paducah, Ky.

An addition, 40x40 feet, will be built to the Dowd Knife Works, Beloit, Wis.

A company is being organized to establish a machine shop at Orange, Tex.

The Missouri, Kansas & Texas Railway will expend $20,000 to improve the yardage, erect new buildings and add new machinery to the plant at Smithville, Tex. A. A. Allen at Dallas is the general manager.

Plans are being prepared for a new $500,000 plant for the Knoxville Iron Co., Knoxville, Tenn.

The Pittsburg Steel Co. has placed contracts with the American Bridge Co. for the buildings of the new steel plant, rod and wire mills at Monongahela City, Pa. The wire and nail department building will be 1200x170 feet; the galvanizing and barb wire building, 800x120 feet; the rod mill, 350x190 feet; the cooperage department, 200x90 feet; boiler house, 450x60

feet; machine shop, 250x70 feet, and the electric plant, 70x40 feet.

A fireproof foundry, 360x60 feet, will be built by the Standard Signal Co., at Troy, N. Y. It is intended to construct a power house, forge shop, machine shop, carpenter's shop, storehouse and office building during 1902.

Two mills will be added to the four sheet mills now under construction at Parkersburg, W. Va., for the Parkersburg Iron & Steel Co. of Pittsburg. The foundations are completed and all six mills are expected to be in operation by the middle of October.

Progress is being made on the new steel plant at Indiana Harbor, Ind., by the Inland Steel Co., of Chicago. Contracts for the new machinery have been placed and the work is to be pushed to completion rapidly.

A two-story building, 38x40 feet, is to be added to the machine shop of Ira B. Smith, Bristol, Conn.

The plant of the Shelby Steel Tube Co. at Greenville, Pa., is to be much enlarged, probably to double the present capacity.

J. P. Herbert, naval architect, has been engaged to prepare plans and specifications for the proposed plant of the Norfolk Shipyard & Drydock Co. at Norfolk, Va.

The White Sewing Machine Co. contemplates the erection of a factory and office building, at Cleveland, to cost $20,000.

The Olds Motor Works, of Detroit, has awarded the masonry contract for the new factory building at Lansing, Mich. The structure is to be 120x600 feet.

The Kalamazoo Stove Co. has been recently incorporated with a capital of $65,000 and will erect a 2-story building at Kalamazoo, Mich. Edward Woodbury is president and A. H. Dane secretary.

A galvanizing plant is to be built by the Sharon Steel Co. at Sharon, Pa.

The Pittsburg District:—

The new plant of James McKay & Co., chain manufacturers, Pittsburg, located at McKees Rocks, Pa., will be placed in operation next week. The plant contains 75 fires and all of them will be started within the next ten days. The main building of the new plant is 60x145 feet and two extensions from this building are 210x60 feet and 270x40 feet in size, respectively. Plans have been prepared to increase the size of this plant, so that it will contain 150 fires, but the buildings have not yet been erected. The plant in Pittsburg has been partly dismantled, but it will be retained and will be operated as Works No. 2.

Work was commenced last week on the additions to the plant of the Braddock Machine & Mfg. Co., Braddock, Pa. When they are completed the daily output will be doubled.

It has been decided by the directors of the New Castle Iron & Steel Co., New Castle, Pa., to re-roll old rails, and to this end contracts for a 12-inch and 18-inch mill have been given to the United Engineering & Foundry Co. of Pittsburg.

The new plant of the Union Steel Co., Denora, Pa., was placed in operation last week. The rod, wire and nail departments are in full operation and employment is given to about 1,000 men. The output of the plant consists of rods, wire nails, plain and annealed wire, barb wire and wire fencing. In a short time the ground will be broken for the erection of a ten-furnace, open-hearth plant, and contracts for the erection of a blast furnace have also been awarded. The stack will be 90 feet high and 22 feet at the bosh.

The Jamison Coal & Coke Co. of Pittsburg has recently acquired 2,300 acres of coal land near Connellsville, Pa., at a cost of $1,118,000. A modern plant, consisting of structural steel tipple, Shaft and railroad siding, will be immediately erected.

The Consolidated Mfg. Co. of Pittsburg was granted a New Jersey charter last week with a capital of $250,000. The company will erect a plant at McKeesport, Pa., for the purpose of manufacturing steel novelties. J. K. Skelly is president; I. L. Aronson, vice-president; B. H. Pettes, secretary; W. H. Sykes, treasurer.

The sheet mill of the American Sheet Steel Co. at Carnegie, Pa., is being dismantled and the mills have been snt to Leechburg, Pa., where they will be stored for the present. The office force has been transferred to Wandergrift, Pa.

CINCINNATI MACHINE TOOL TRADE.

The machine tool trade in Cincinnati has shown a continued improvement since the settlement of the machinists' strike some months ago, and both employers and men are apparently satisfied with conditions. All good mechanics in the city are employed and some of the shops are running over time. The trade is healthy and orders are coming from all parts of the country and to a limited extent from abroad. The domestic business, however, is the best business that the tool manufacturers have now and it is well distributed throughout the country and through all lines. It must not be thought that the foreign business has fallen off alarmingly, since there is still a good trade with England, though not much doing with Russia and but a moderate amount with Germany. A letter recently received by Cincinnati relatives of S. Weinberg gives that gentleman's ideas of Russian trade at this time. He represented a number of American, mostly Cincinnati, machine tool manufacturers until recently, and he says in his letter that there would be no use in attempting to sell machinery in Russia at this time on account of the depression.

At the exposition in connection with the second Cincinnati Fall Festival there is quite a creditable display of machine tools. The exhibit is a joint one in which the following concerns are entered as exhibitors: Lodge & Shipley Machine Tool Co., Cincinnati Planer Co., Bickford Drill & Tool Co., Cincinnati Milling Machine Co., Cincinnati Shaper Co., Cincinnati Machine Tool Co. The exhibit is in charge of a demonstrator, and some of the tools shown are as follows: 24-inch motor driven lathe with taper attachment and 18-inch box tool with turret on carriage exhibited by the Lodge & Shipley Machine Tool Co.; 24-inch planer by the Cincinnati Planer Co.; radial drill by the Bickford Drill & Tool Co.; No. 1 Universal grinder and plain milling machine by the Cincinnati Milling Machine Co.; 26-inch triple geared shaper by the Cincinnati Shaper Co.; and 24-inch upright drill with geared tapping attachment on spindle by the Cincinnati Machine Tool Co. In addition to these machinery exhibits there are shown some band saws by the J. A. Fay & Egan Co.; elevator in use in the Power Hall by the Warner Elevator Mfg. Co.; an exhibit of working machinery by the United Shoe Machinery Co., in connection with the exhibit of the J. M. Potter Co.; and engines by Houston, Stanwood & Gamble.

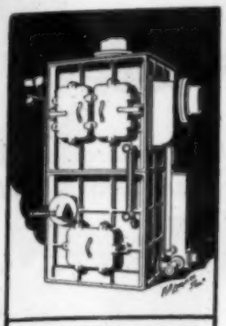
George Bullock, president of the Bullock Electric Mfg. Co., has returned from his trip abroad that was undertaken largely for the purpose of continuing the negotiations for the building of a branch factory in Great Britain. The details of this enterprise have not all been arranged as yet, but Mr. Bullock reports that they are progressing satisfactorily. Several sites have been offered, and if the plans now working out reach a conclusion the new branch will be begun shortly and will be devoted to the manufacture of electrical machinery for the British and European market.

Two Cincinnati concerns secured a good sized order for tools from the New Zealand Railway, with headquarters at Auckland, this week. The Cincinnati Planer Co. will soon ship a large planer 48 inches wide by 48 inches high and 12 feet long; and the Wais & Roos Punch and Shear Co. is preparing for shipment a punch and shearing machine for the same road.

The Cincinnati Planer Co. has just taken an order for a 36-inch planer to be shipped to the Norfolk Navy Yard.

We are informed by the Reeves Pulley Co., Columbus, O., that the large variable transmission device, described by our correspondent at the Pan-American Exposition, is to regulate the speed of a paper mill. The paper making industry is stated to be one of the largest and most attractive fields for a variable speed transmission and it is the most important field in which the firm named operates.

The requirements of modern business are increasingly stringent, but the exacting advertiser in an English contemporary desires a "smart, intelligent assistant for tool department; must be good salesman, stockkeeper, and window-dresser. State age, height, salary required, experience, and enclose photo with application, etc." This is setting an unusually high standard in the hardware trade.



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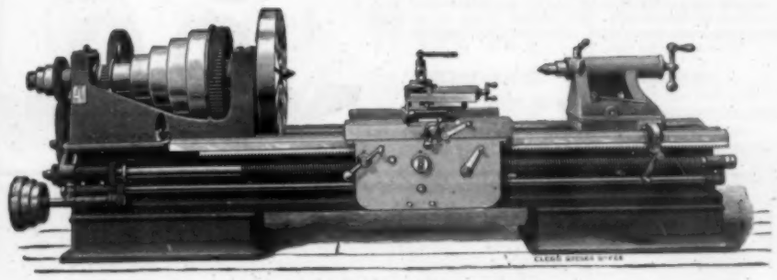

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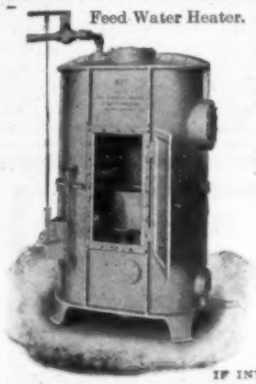

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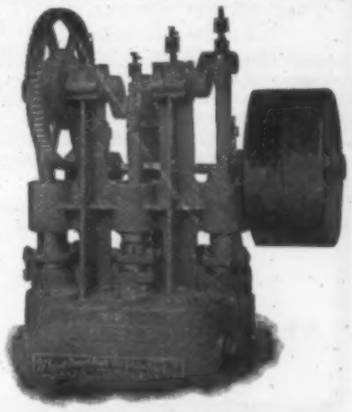

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Name Plates. Edmund S. Sperry.
Newton Cupola. Illustrated.
Sly Water Mill. Illustrated.
Construction and Management of Cupolas. Thos. D. West.
What Will Make Iron Wear? W. Osborne.
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Why Foundries Lack Competent Foremen. Wm. H. King.
Anthracite Coal as Cupola Fuel. T. F. Stimpson.
Delano Pulley Molding Machine. Illustrated.
Among the Foundries.
Air Furnace Metal.
Chimmie Powers' Answers.
Cast Iron Car Wheels. William Fawcett.
Cast Iron Notes. W. J. Keep.
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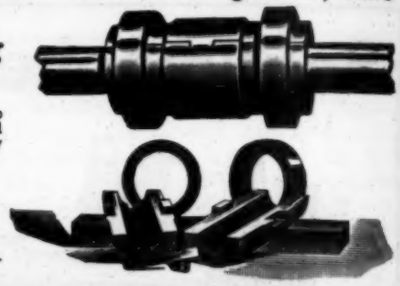

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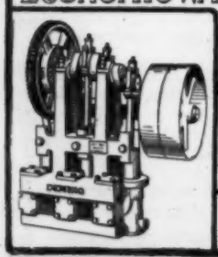

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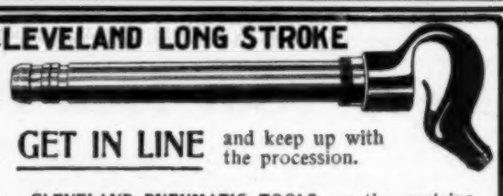

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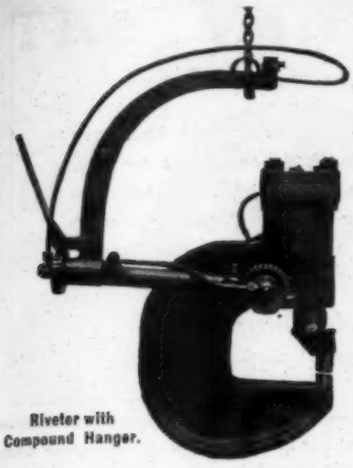

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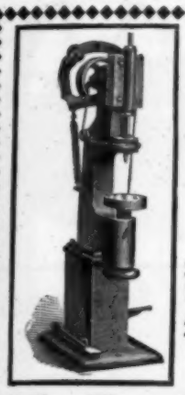

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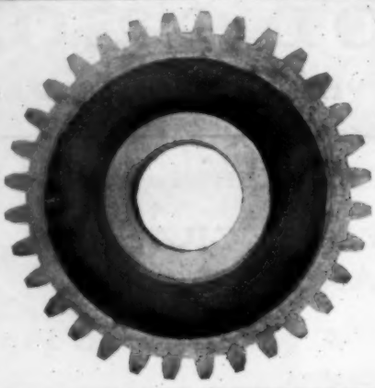

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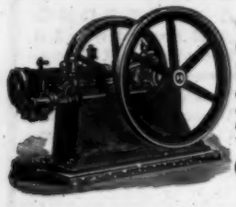

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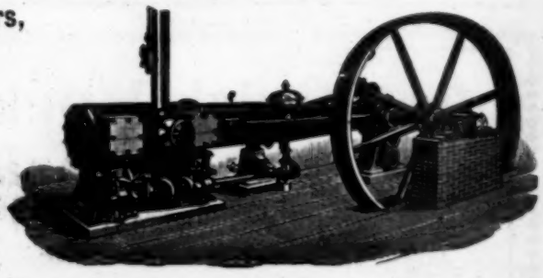

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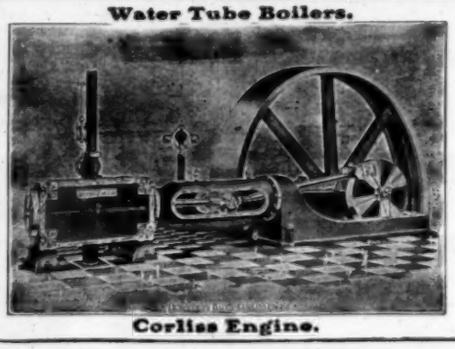

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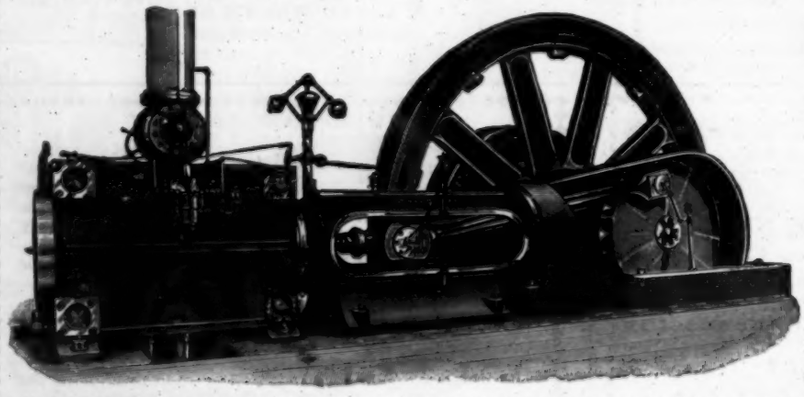

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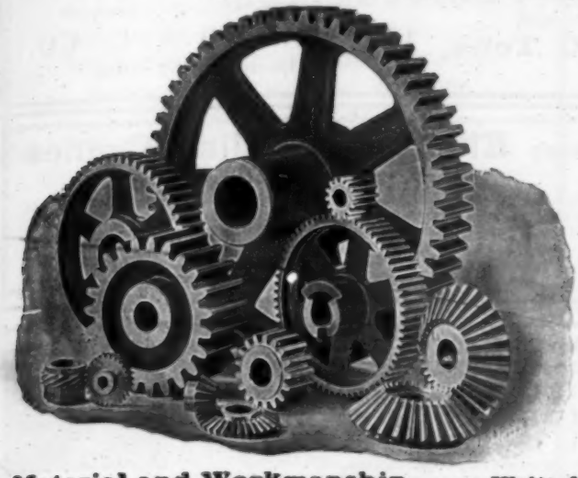

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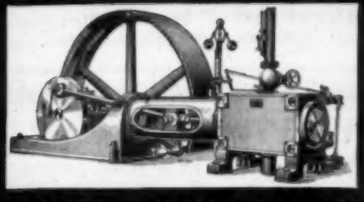

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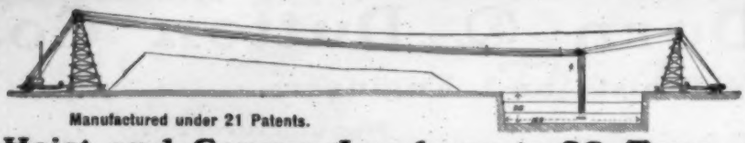

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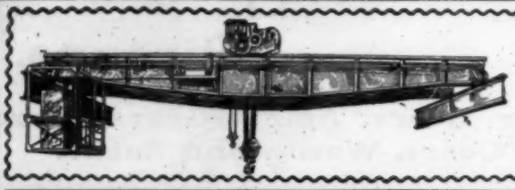

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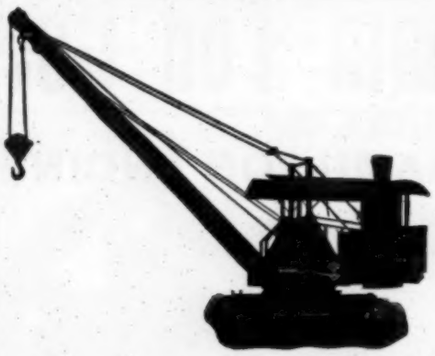

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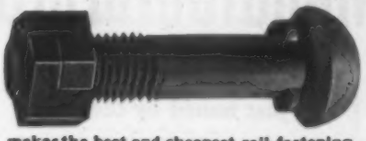

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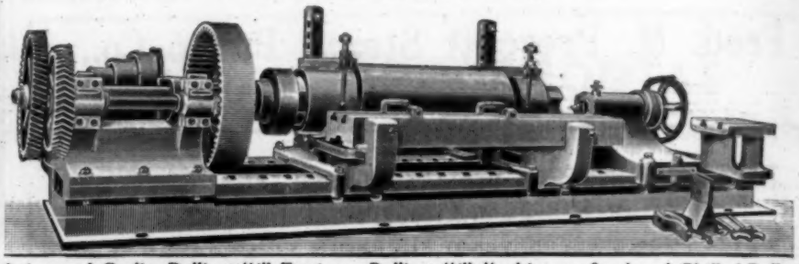

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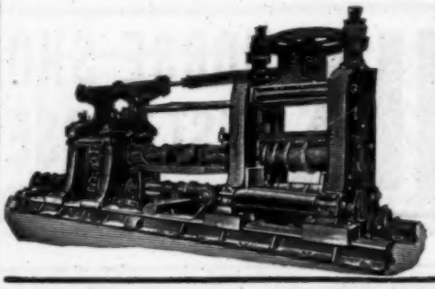

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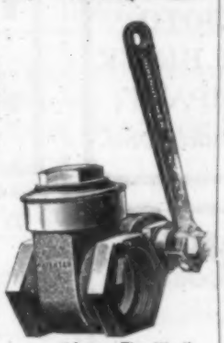

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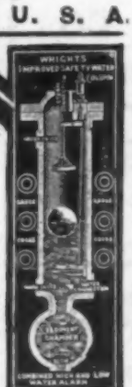

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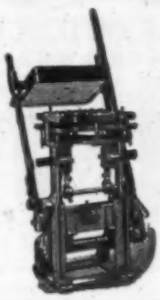

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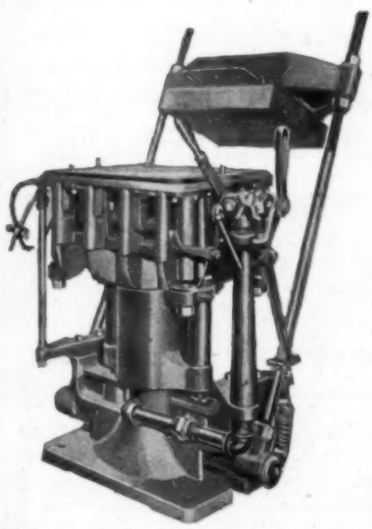

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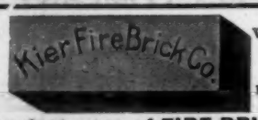

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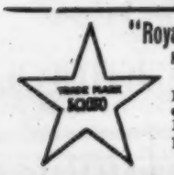

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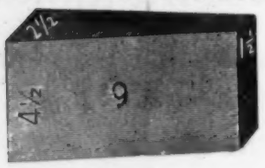

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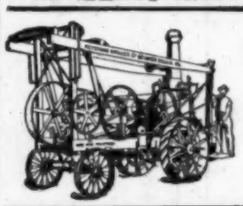

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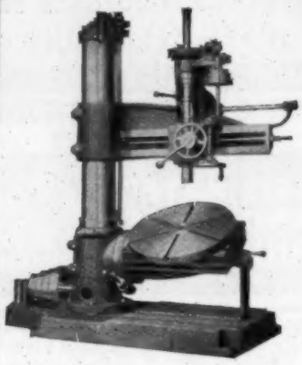

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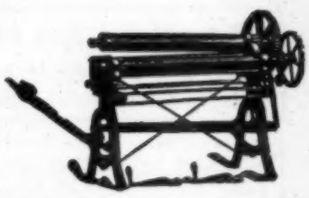

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